Risk factors for alcohol and marijuana use among adolescents in foster care

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Received 13 December 2005; received in revised form 12 June 2006; accepted 15 June 2006

Abstract

This study examined the influences of individual and social risk factors on alcohol and marijuana use among a sample of foster care adolescents. Data were collected through baseline structured interviews with 320 adolescents (aged 15–18 years) who resided in foster care placements and participated in a larger evaluation study of an independent living program. Approximately 40% of the adolescents reported alcohol use, 36% reported marijuana use, and 25% reported both alcohol and marijuana use during the 6 months prior to the interview. Final logistic regression models indicated that having friends who used marijuana and other substances and having skipped school remained most predictive of using alcohol, marijuana, or both alcohol and marijuana. Recommendations for substance abuse prevention and treatment for these vulnerable adolescents are proposed. © 2007 Elsevier Inc. All rights reserved.

Keywords: Alcohol use; Marijuana use; Foster care; Adolescents; Risk factors

1. Introduction

On any given day, as many as 250,000 adolescents can be found residing in the care and custody of the U.S. foster care system (Freundlich, 2003; Maza, 1996; U.S. Department of Health and Human Services, 2002). Examination of empirical research indicates that these adolescents often present with a variety of psychosocial problems and risk behaviors, including: histories of emotional, physical, and sexual abuse (Elze, Auslander, McMillen, Edmond, & Thompson, 2001; Perrin, Simms, Dubowitz, & Szilagy, 2000); neglect and abandonment (Barth, 1990); family instability and disruption; multiple residential and school placements; educational deficits (McMillen, Auslander, Elze, White, & Thompson, 2003); and delinquent behaviors (Auslander et al., 2002; Jonson-Reid & Barth, 2000). As in the general adolescent population, this myriad of problems is assumed to translate into an increased likelihood for using substances, primarily alcohol and marijuana (Dennis, 2004; Groze, McMillen, & Haines-Simeon, 1993; Simms, Dubowitz, & Szilagy, 2000). Ironically, most states are unable to identify the number of adolescents in out-of-home care who have substance use problems, and few have written policies that require parents involved with the foster care system to report their child’s substance use (Leslie, Hurlbutt, Landsverk, Barth, & Goldin, 2003). Moreover, the prevalence and predictors of alcohol and marijuana use among adolescents in foster care have received only perfunctory attention in the research literature, and much of what is known of alcohol and marijuana use among adolescents who are currently in foster care has been derived from a few rather outdated studies that often utilized small samples (Carpenter, Clyman, Davidson, & Steiner, 2001; Dumaret, 1997) and from retrospective studies of those who had already exited foster care. This study fills a gap in the literature by examining a larger sample of adolescents who are currently in foster care (congregate care and other out-of-home placements) and by answering...
Do rates of alcohol and marijuana use among adolescents in foster care differ by age, race, and gender? What individual and social risk factors are related to the use of alcohol, marijuana, or both alcohol and marijuana among adolescents in foster care?

In an early retrospective study, Jones and Moses (1984) examined the community adjustment and current functionality of 328 adults who had been in foster care as children for 1 year or longer and found that 20% reported current alcohol problems. Barth (1990) found that 19% of his sample of 55 young adults who had exited foster care in recent years reported drinking at least once per week, 20% reported illegal-substance use in the past month, and 56% reported illegal-substance use while in care. In a national evaluation of independent living programs for children and adolescents in foster care, Cook, McLean, and Ansell (1991) reviewed 1,644 case records and found that 17% of adolescents exiting care had been identified as having substance abuse problems and 12% had been identified as having alcohol problems. In a more recent study, the 1998–1999 Washington State Adolescent Foster Care Survey (Kohlenberg, Nordlund, Lowin, & Treichler, 2002), which estimated the rates of alcohol and other substance use among adolescents aged 12–17 years who resided in foster care, found that 34% of 231 participants had used alcohol at least once in the past year, with 13% having used alcohol in the past month. Twenty-three percent reported marijuana use in the past year, with 10% having used marijuana in the past month. Risk factors associated with alcohol and marijuana use in the past month included life transition and mobility, academic performance, school commitment, antisocial behavior, and use of substances by friends. However, findings from the Washington State study are not necessarily representative of all foster care adolescents, as the sample was limited to adolescents who lived with foster families and did not include their counterparts who resided in congregate care or treatment facilities.

In one of the few studies to have examined demographic differences in substance use among adolescents in foster care, Taussig and Tahmi (2001) interviewed 149 maltreated adolescents who had exited foster care 6 years prior, and found that Caucasian and African American adolescents did not significantly differ on rates of reported past-year use of various illicit substances, including alcohol and marijuana. Using the same sample data, Taussig, Clyman, and Landsvverk (2001) revealed that older adolescents reported greater use of any substance and that gender was not a significant predictor of overall substance use. A recent examination of the 2002 and 2003 National Survey on Drug Use and Health, a primary source of information on the use of alcohol and other substances by the U.S. civilian non-institutionalized population aged 12 years and older (Substance Abuse and Mental Health Services Administration [SAMHSA], 2005), found that 37.6% of the approximately 680,000 children and adolescents (aged 12–17 years) who had ever been in foster care had used alcohol in the past year and 33.6% had used marijuana or other illicit substances. Caucasian adolescents who had ever been in foster care were more likely than their African American counterparts to have used alcohol (41.4% vs. 29.8%) or illicit substances (36.2% vs. 26.7%) in the prior year. No gender differences in alcohol or illicit substance use were found. Although the aforementioned studies were retrospective and may not be indicative of alcohol and marijuana use among adolescents who are currently in foster care, they suggest that being older, Caucasian, or female in foster care is likely to place an adolescent at increased likelihood for the use of alcohol and other substances.

The present study is guided by Problem Behavior Theory (PBT; Jessor & Jessor, 1977), a framework that has been utilized to explain and to predict alcohol and marijuana use in the general adolescent population. PBT is based on the premise that problem behaviors are part of normal adolescent development and play a major role in transition to adulthood. The theory hypothesizes that many adolescent risk behaviors are interrelated manifestations of a common underlying syndrome of problem behavior and that this pattern is directly influenced by one’s environmental context. The use of alcohol and marijuana among general adolescent populations has been linked to a variety of individual and social risk indicators (e.g., maltreatment histories, family and life disruptions, school behavior, and peer substance use), and the environmental context of adolescents in foster care is riddled with such factors. Therefore, in this study, it is hypothesized that adolescents who experience these factors will report an increased use of alcohol, marijuana, or both alcohol and marijuana. Information derived from this study provides valuable insight to developing adequate and efficient substance abuse prevention and treatment for these vulnerable adolescents.

2. Methods

2.1. Sample recruitment and selection

The present study utilizes baseline data collected from a sample of 320 older adolescents who had been placed in foster care or in other out-of-home care by the child welfare services of a Midwestern metropolitan area and had participated in a life-skills program designed to assist with their transition to independent living. Adolescents were eligible for the study if they were 15–18 years prior to starting the program and were placed in out-of-home care through child welfare services. Eligibility was assessed by social workers prior to participation in the study via a brief informal group meeting that assessed adolescents’ interest in the program and their ability to interact appropriately with others in a group setting. Adolescents were excluded from...
the study if they displayed severe learning problems (i.e., unable to read or write) or severe behavior problems (e.g., violent behavior). Four adolescents were excluded from the study for severe behavioral problems, as they were seen as being incapable of participating without seriously disrupting the group process. For this study, 31 cases from the original recruited sample of 351 were excluded because their race was designated as “other.” This strategy was utilized to avoid ethnic lumping (Fontes, 1995), leaving a final sample comprising 320 foster care adolescents aged 15–18 years ($M = 16.3, SD = .84$). More than half of the adolescents ($53.8\%$, $n = 172$) were female, $46.2\%$ ($n = 148$) were male, $66.3\%$ ($n = 212$) were self-identified African American, and $33.7\%$ ($n = 108$) were self-identified Caucasian.

Child welfare social workers, group home workers, foster or biologic parents, and the adolescents themselves made referrals to the study. The Institutional Review Board at Washington University (St. Louis, MO) approved all procedures. Informed consent was obtained from legal guardians, and written assent was provided by adolescents before baseline interviews were completed. Structured interviews with the adolescents were then conducted by trained Master of Social Work (M.S.W.) students. Each adolescent was paid US$5 for participating in the study.

### 2.2. Measurement

Age, race, gender, and multiple individual and social risk factors indicative of foster care experience served as independent variables for the study. Age was recoded as $0 = 15–16$ years and $1 = 17–18$ years. Race and gender were dummy-coded as $0 = \text{African American}$ and $1 = \text{Caucasian}$, and $0 = \text{female}$ and $1 = \text{male}$, respectively. Self-reported lifetime ("when I was growing up") histories of maltreatment, including emotional neglect, emotional abuse, physical neglect, and physical abuse, were measured by the Childhood Trauma Questionnaire (Bernstein & Fink, 1998). To create emotional and physical maltreatment subscale scores, 20 Likert-type items (five per subscale), scored from $1 = \text{never true}$ to $5 = \text{very often true}$, were aggregated and totaled. Based upon recommended cutoff scores, subscale total scores were recoded as $0 = \text{has not experienced a specific maltreatment}$ and $1 = \text{has experienced a specific maltreatment}$ and then collapsed into two variables: emotionally neglected or abused, and physically neglected or abused. Three yes/no format interview items, adapted from those developed by Russell (1986), were utilized to assess: whether the adolescent had ever been forced to touch someone else’s private parts against one’s wish; whether the adolescent’s private parts had ever been touched against one’s wish; or whether the adolescent had ever experienced sexual abuse, vaginal, anal, or oral sex against one’s wish. If an adolescent answered yes to any of the three questions, the individual was coded $1 = \text{has been sexually abused}$; an adolescent who answered no to all questions was coded $0 = \text{has not experienced sexual abuse}$.

To determine individual and social risk factors for alcohol and marijuana use, participants were asked a series of yes/no questions. These questions ascertained if the adolescents had ever run away from home or placements, if they had been suspended or expelled since the seventh grade, and if they had skipped school without permission at

<table>
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<th>Marijuana use</th>
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<td>17–18 ($n = 133$)</td>
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<td>75</td>
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<td>44.6</td>
<td>110</td>
<td>42.6</td>
<td>78</td>
<td>30.2</td>
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3. Results

3.1. Frequencies of individual and social risk factors, and rates of alcohol and marijuana use

Three fourths of the sample (75.9%, n = 243) reported histories of emotional neglect or abuse, with a similar number (76.9%, n = 246) reporting physical neglect or abuse. About one third (33.1%, n = 106) reported histories of sexual maltreatment. Half of the adolescents (52.8%, n = 169) had run away from where they were living on at least one occasion. Almost three fourths (72.2%, n = 231) had been suspended or expelled at least once since seventh grade. In the last year that they were in school, 46.9% (n = 150) had skipped school without permission, 28.1% (n = 90) had engaged in at least one physical fight with another student, and 30.6% (n = 98) had engaged in a verbal or physical altercation with a teacher. Sixty-five percent (n = 208) had failed or repeated a grade since seventh grade, 72.5% (n = 232) had friends who drank alcohol at least once a week, and 80.6% (n = 258) had friends who used marijuana or other substances.
Approximately 40% ($n = 126$) of the study sample reported alcohol use, 36% ($n = 114$) reported marijuana use, and 25% ($n = 81$) reported alcohol and marijuana use in the past 6 months. Table 1 displays the rates of the reported use of alcohol, marijuana, or both alcohol and marijuana in the past 6 months among adolescents within demographic, and individual and social risk categories.

### 3.2. Relationships among demographics, risk factors, and alcohol and marijuana use

#### 3.2.1. Demographics, and alcohol and marijuana use

Unadjusted logistic regression analyses were employed to determine the independent effects of age, race, and gender on alcohol and marijuana use (Table 2). Age and gender were not significantly related to the use of alcohol, marijuana, or both alcohol and marijuana in the past 6 months. That is, younger adolescents (15–16 years) did not have alcohol and marijuana use different from that of older adolescents (17–18 years), and female foster care adolescents were equally likely as their male counterparts to use alcohol, marijuana, or both alcohol and marijuana. However, race was a significant predictor of the use of marijuana or both alcohol and marijuana, with Caucasian adolescents being more than one and a half times more likely than their African American counterparts to use marijuana (odds ratio \(OR = 1.45\); 95% confidence interval \([1.20, 1.81]\) and two times more likely to report the use of both alcohol and marijuana (\(OR = 2.08\); \(CI = [1.04, 2.83]\)). To further explore the relationship between demographics and the use of alcohol and marijuana, all possible two-way interactions were tested among age, race, and gender on substance use outcomes. Results indicated no statistically significant interactions in relation to the use of alcohol, marijuana, or both alcohol and marijuana.

#### 3.2.2. Individual and social risk factors, and alcohol and marijuana use

Findings on the independent effects of individual and social risk factors on the use of alcohol, marijuana, or both alcohol and marijuana indicate that multiple factors place these adolescents at increased likelihood for using alcohol, marijuana, or both alcohol and marijuana compared to their respective counterparts. Specifically, unadjusted logistic regression analyses (Table 2) revealed that 7 of 14 risk factors (i.e., ran away, suspended or expelled, skipped school, fought with teachers, failed classes or repeated a grade, friends drank alcohol, and friends used marijuana) were significantly related to the use of alcohol, marijuana, or both alcohol and marijuana in the past 6 months. Histories of emotional neglect or abuse, physical neglect or abuse, and sexual abuse were not significantly related to the use of alcohol, marijuana, or both alcohol and marijuana.

#### 3.3. Multivariate models predicting alcohol and marijuana use

After adjusting for the simultaneous effects of demographics and each individual and social risk factor, two factors (skipped school and friends used marijuana and other substances) were significant predictors of the use of alcohol, marijuana, or both alcohol and marijuana (Table 3). Adolescents who had skipped school were two and a half...
times more likely to use alcohol (OR = 2.46; CI = [1.26, 4.80]), more than three and a half times more likely to use marijuana (OR = 3.72; CI = [1.80, 7.70]), and more than four and a half times more likely to use both alcohol and marijuana (OR = 4.61; CI = [1.93, 11.02]) than were those who had not skipped school. Adolescents who reported having friends who used marijuana or other substances were 4 times more likely to use alcohol (OR = 4.15; CI = [1.19, 14.47]), almost 9 times more likely to use marijuana (OR = 8.85; CI = [1.73, 45.37]), and almost 12 times more likely to use both alcohol and marijuana (OR = 11.72; CI = [1.22, 112.35]) than their counterparts.

4. Discussion

This study found that 40% of the foster care adolescents interviewed used alcohol, 36% used marijuana, and 25% used both alcohol and marijuana in the past 6 months. These rates confirm that adolescents in foster care use alcohol and marijuana at rates surpassing those of adolescents in the general population (Grunbaum et al., 2004; Johnston, O’Malley, Bachman, & Shulenberg, 2004; SAMHSA, 2004). Moreover, this sample of foster care adolescents was found to use alcohol and marijuana at rates exceeding those from earlier studies with smaller samples and those from more recent retrospective studies (SAMHSA, 2005). This inconsistency in findings across studies may be due to methodological and sample variations between this study and previous studies. First, research findings related to the alcohol and marijuana use of adolescents in foster care have been based upon studies that, in actuality, have utilized an array of participants, including adults who had been in foster care for 1 year as children, adolescents at the time they exited care, adolescents who lived with foster families, maltreated adolescents who had exited foster care 6 years prior, and adolescents who had ever been in foster care. Second, data collection methods and measurement time frames of studies on foster care adolescents vary from chart reviews of administrative data at the point of exit from care to retrospective interviews of substance use behavior up to 6 years after the fact. Subsequently, some of the previous studies may not accurately reflect, as does this study, the substance use behaviors of adolescents who are currently in foster care.

The finding that 7 of 14 risk factors examined were related to the adolescents’ use of alcohol, marijuana, or both alcohol and marijuana suggests a general pattern of co-occurring problem behaviors among many foster care adolescents that places them at increased likelihood for substance use. However, after adjusting for the simultaneous effects of each risk factor, skipping school and having friends who used marijuana and other substances appear to distinguish the use of either and both substances above and beyond involvement in a general pattern of problem behavior. One could conclude that skipping school and having friends who used marijuana and other substances are either the strongest or the most influential factors associated with substance use, or that they are overlapping indicators of an underlying problem behavior syndrome influenced by the environmental context of living in foster care. The prior explanation supports the simplistic scenario that, when foster care adolescents skip school, they are more likely to be left unsupervised and are thus vulnerable to the influences of their substance-using friends. They would also be less likely to receive substance abuse education and prevention programs offered in their school. The latter explanation suggests a more complex interaction between the adolescents’ environmental contexts and behaviors. Most likely, it is a combination of both explanations, which may make foster care adolescents more resistant to traditional school-based and group interventions that do not target their idiosyncratic risk behaviors and do not consider their environmental realities.

The finding that having friends who used marijuana and other substances substantially increased foster care adolescents’ likelihood for the use of alcohol, marijuana, or both alcohol and marijuana requires additional comment. In this study, it was not clear whether subjects were referring to acquaintances, best friends, drug partners, peers in general, friends at residential placement, or friends at school. Moreover, it is not known whether they were influenced by friends who were self-selected because they engaged in similar behaviors or whether they were just developmentally predisposed to peer influence in general.

Findings related to demographic differences in alcohol and marijuana use revealed that older foster care adolescents were not more likely than younger adolescents to use alcohol and marijuana. The fact that age was not related to alcohol and marijuana use in this study may be explained by the constricted age range of the sample (i.e., 15–18 years). Caucasian adolescents were more likely than African Americans to report current marijuana use and the use of both alcohol and marijuana, and male foster care adolescents were equally likely as their male counterparts to use alcohol, marijuana, or both alcohol and marijuana—findings inconsistent with trends identified among the general adolescent population. The greater risk for using alcohol and marijuana among Caucasians (female Caucasians, in particular) may be partially explained by the unique characteristics of adolescents in the foster care system. African Americans are disproportionately represented in the child welfare system—a longstanding trend that has been discussed by many (Ards, Chung, & Myers, 1998; Jonson-Reid, 2002; Morton, 1999). This may be potentially due to differences in the reporting and substantiating of cases between African Americans and Caucasians by the child welfare system. Caucasians are not as likely as African Americans to be reported and substantiated for foster care services and, when they are, tend to be older and to exhibit more severe behavioral problems.
Of particular note is the finding that histories of maltreatment were not related to current alcohol and marijuana use among this sample of foster care adolescents. These findings should be interpreted with caution, as the relationship among sexual abuse, physical abuse, and substance use has been consistently found in the general adolescent population and among adolescents in substance abuse treatment (Dennis, 2004). However, it is possible that, in this study, the adolescents with histories of maltreatment may have been more likely to receive counseling through the child welfare system to address these specific issues. Garland, Landsverk, Hough, and Ellis-Macleod (1996) examined the predictors of mental health service utilization among children and adolescents in foster care and found that children who were removed from their homes due to sexual abuse, physical abuse, or both sexual and physical abuse were more likely to receive services than those who were removed due to neglect and caretaker absence. Additionally, a number of unmeasured variables may have been more useful in understanding the relationship between histories of maltreatment and alcohol and marijuana use among adolescents in foster care. For example, the severity of the impact of childhood sexual abuse has been found to be associated with a number of abuse-specific variables: age at onset, relationship to the offender, frequency and duration, type of sexual acts involved, and use of force (Beitchman, Zucker, Hood, DaCosta, & Akman, 1991; Beitchman et al., 1992).

4.1. Study limitations

Because this study used a cross-sectional design, causal sequences were not tested between risk factors and the use of alcohol, marijuana, or both alcohol and marijuana. However, this design was sufficient for identifying the likelihood of alcohol and marijuana use given specific individual and social factors. Second, alcohol and marijuana dependence and abuse were not measured in this study, limiting the comparability of the substance-use findings to other studies that employed diagnostic measures.

4.2. Implications for substance abuse prevention and treatment

This study has demonstrated that multiple factors (having skipped school and having friends who used marijuana and other substances, in particular) place adolescents in foster care at increased risk for using alcohol and marijuana. What can realistically be done to alter the individual behaviors, social network, and environmental contexts of foster care adolescents and to reduce the likelihood of their substance use? First, substance abuse prevention efforts that target adolescents in foster care group homes and residential facilities need to be systematically implemented and evaluated. As risk behaviors are idiosyncratic and are influenced by each individual’s environmental context, prevention efforts that are tailored to address risk factors at the individual level and specific environmental influences for the alcohol and marijuana use of each adolescent in foster care could prove more effective than traditional group efforts.

Although additional research is needed to determine whether a peer influence explanation is more plausible than a peer selection explanation for the strong influence of friends who used marijuana and other substances on the alcohol and marijuana use of adolescents in foster care, it is still very unlikely that adolescents in foster care will allow someone else to choose their friends. However, their selection pools can be increased and their social networks can be widened if they are provided with stable educational and residential experiences. The number of school-related behavior problems suggests a need for informed educational advocates to help arrange appropriate educational placements and maintain school placements, even if living arrangements change. Programs that are designed to increase school engagement, to bring back to school individuals who have skipped or have dropped out, and to provide intense remedial education and tutoring services should prove beneficial. This may involve outreach programs for adolescents who are not in school, have dropped out, or are in group care to address environmental influences, to keep them in school, and to connect them with supportive mentors. Engaging the adolescents in school may also distance adolescents from their social networks at foster and group homes and may place them in the proximity of new peer networks and social activities.

To improve the likelihood of preventive efforts being successful, increased collaboration between child welfare agencies, substance abuse treatment facilities, and educational institutions will be needed. Schools may need more information about adolescents in the foster care system, and child welfare agencies may need further clarification of educational placement options and procedures. Frontline child welfare staff and teachers could also be trained in performing initial substance use screenings and in motivating substance-related behavior change among adolescents in foster care.

Approximately 20,000 adolescents aged 16 years and older are annually emancipated from, or age out of, the foster care system, only to find out that they are generally no longer eligible for many services and are poorly prepared for employment and independent living (McMillen & Tucker, 1999). Studies of these older adolescents have shown that they are more likely than those in the general population to drop out of high school, be unemployed, and be dependent on public assistance (Cook et al., 1991). Many find themselves homeless, without health care, in prison, or parents at an early age (Courtney, Piliavin, Grogan-Kaylor, & Nesmith, 2001; McDonald, Allen, Westerfelt, & Piliavin, 1996; McMillen & Tucker, 1999). Because of these dire outcomes, all of which are highly associated with increased
substance use, it is imperative that future research identify the risk and protective factors for substance use among these adolescents and develop effective prevention efforts that target such factors before they exit foster care and are no longer eligible for services.

Acknowledgments

Support for this work was provided by grant R01 HD35445 from the National Institute of Child Health and Human Development and the Annie E. Casey Foundation to the George Warren Brown School of Social Work at Washington University. We would like to thank the staff at the Children’s Division of the Missouri Department of Social Services in St. Louis, MO.

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