Published in final edited form as:

J Stud Alcohol. 2006 May ; 67(3): 373–381. doi:10.15288/jsa.2006.67.373.

Music, Substance Use, and Aggression

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Abstract

Objective—This study investigated whether young people’s substance use and aggressive behaviors are related to their listening to music containing messages of substance use and violence.

Method—Data were collected using self-administered questionnaires and from a sample of community college students aged 15-25 (N = 1056; 43% male). A structural equation modeling method was used to simultaneously assess the associations between listening to various genres of music, alcohol use, illicit drug use, and aggressive behaviors, taking into account respondents’ age, gender, race/ethnicity, and level of sensation seeking.

Results—Listening to rap music was significantly and positively associated with alcohol use, problematic alcohol use, illicit drug use, and aggressive behaviors when all other variables were controlled. Additionally, alcohol and illicit drug use were positively associated with listening to musical genres of techno and reggae. Control variables such as sensation seeking, age, gender and race/ethnicity were significantly related to substance use and aggressive behaviors.

Conclusion—The findings suggest that young people’s substance use and aggressive behaviors may be related to their frequent exposure to music containing references to substance use and violence. Conversely, music listening preference may reflect some personal predispositions or lifestyle preferences. Alternatively, substance use, aggression and music preference are independent constructs, but share common “third factors.”

Listening to music is the number one rated leisure-time activity for American youth (Roberts, Foehr et al., 1999; Roberts, Henriksen et al., 1999). Some music genres contain more references to substance use and social defiance than do other genres. A recent study of music popular among adolescents from 1996-1997 revealed that nearly half (47%) of all rap/hip hop (hereafter referred to as rap) songs mentioned alcohol (Roberts, Henriksen et al., 1999). In contrast, other genres of music were much less likely to mention alcohol in the lyrics (country-western [13%], hot-100/top-40 [12%], alternative rock [10%], and heavy metal [4%]). Moreover, nearly two thirds of the rap songs mentioned illicit drugs as compared to approximately a tenth of the songs from the other genres. Another study of rap music indicated that references to alcohol in rap song lyrics increased five times (8% →

44%) from 1979 to 1997 (Herd, 2005). Of songs that mentioned alcohol, the positive attitude toward alcohol expressed in lyrics increased from 43% in 1970-1989 to 73% in 1994-1997. Furthermore, a music video study revealed that twice as much violence and criminal activity was depicted in rap and rock music videos as compared to country, adult contemporary and rhythm-and-blues music videos (DuRant, Rich et al., 1997). Similarly, weapon carrying was shown more often in rap and rock music videos. Together, these studies raise an important issue: Will frequent exposure to music containing references to substance use, violence, and social defiance impact youth's behaviors?

Empirical studies suggest that alcohol and illicit drug use among youth may be associated with listening to popular music such as hard rock, heavy metal, rap, and techno (e.g., Arnett, 1991, 1992; Forsyth et al., 1997; Hitzler, 2002; Miranda and Claes, 2004). Similarly, aggressive behaviors have been linked to various genres of music. For example, studies have shown that adolescents with a preference for heavy metal or hard rock music reported higher rates of reckless behaviors than those who did not like these forms of music (Arnett, 1991, 1992). In addition, exposure to rap music was positively associated with aggressive behaviors and negative health outcomes at a 12-month follow-up for African American girls of ages 14-18 (Wingood et al., 2003). Consistently, experimental studies demonstrated that greater exposure to popular music containing antisocial content was associated with more favorable attitudes toward antisocial behaviors and a greater likelihood of performing such behaviors (Anderson et al., 2003; Hansen and Hansen, 1990; Johnson et al., 1995).

Rap music has been identified as particularly glorifying and encouraging the use of alcohol, other substances and violence more than other genres of music (Herd, 2005). A closer look at some features of rap music is warranted. Rap music is the predominant musical genre of hip hop culture. Rap music rose to American prominence in the early 1980s with New York disc jockeys appropriating Jamaican deejays' style of talking over pre-recorded instrumental tracks (Ayazi-Hashjin, 1999; Davey D., 1984; Ogg and Upshal, 1999). It is the most listened to genre of music for African American and Latino youth and the second-most listened to genre for youth of European origin (Roberts, Foehr et al., 1999). Rap music is used by many advertisers to promote products that target urban teens and young adults (Atkinson and Holliday, 2003; Friedman, 1992; Spiegler, 1996). Moreover, many rap musicians are involved in promoting alcoholic beverages (Alaniz and Wilkes, 1998; Allen-Taylor, 1997; Herd, 1993, 2005). Malt liquor, in particular, has been portrayed as the "gangsta drink of choice, the brew of alienation" in rap music (Allen-Taylor, 1997, interview with Makani Themba) and is associated in popular culture with drug use, underage drinking, misogyny, violence, and irresponsible sex (Alaniz and Wilkes, 1998; Herd, 1993). Concerns about the influences of marketing tactics on youth drinking arise (Alaniz and Wilkes, 1998; Allen-Taylor, 1997; Center for Science in the Public Interest, 1998; Herd, 1993, 2005). Additional concerns about rap music's influence on youth are generated from the messages embedded in the rap music and the violent lifestyles of the performers (e.g., Alaniz and Wilkes, 1998; Hansen, 1995; Herd, 1993). Specifically, misogynistic lyrics, profane language, and glorification of violence have become hallmarks of some rap music known as "gangsta rap" (Rule, 1994; Toop, 2004). The undercurrents of violence and profane language of "gangsta rap" are criticized for its potential detrimental influences on youth and result in calls for "gangsta rap" musicians' self discipline from musicians, politicians, African American

church groups, music retailers, the police, and Tipper Gore's Parents' Music Resource Center (Rule, 1994; Toop, 2004).

Individuals' listening preference for certain styles of music may be related to personal characteristics. A recent college study showed that liking the music genres of punk, heavy metal, and reggae were associated with higher levels of sensation seeking (Weisskirch and Murphy, 2004). Consistently, Arnett (1991, 1992) reported that adolescents who had listening preferences for heavy metal or hard rock music expressed higher levels of sensation seeking than did those who did not prefer these forms of music. Once level of sensation seeking was controlled, however, the associations between musical preference and most adolescent reckless behaviors were no longer significant. Arnett suggested that sensation seeking underlies both reckless behaviors and music preference. In other words, adolescents with higher levels of sensation seeking are more attracted to heavy metal or hard rock music and have a greater propensity for reckless behaviors as well.

In summary, prior research suggests a connection between preferences for certain genres of music and alcohol and illicit drug use, aggression, and other risky behaviors. More recently, rap music has been viewed as a genre of music that is associated more with these behaviors and is therefore of greater concern in its influence on youth. The present study aimed to investigate whether young people's substance use (i.e., alcohol and illicit drugs) and aggressive behaviors were related to their listening to popular music, particularly rap music. Because references to alcohol, drugs and violence are frequently shown in various forms of popular music (DuRant, Rich et al., 1997; DuRant, Rome et al., 1997; Roberts, Henriksen et al., 1999), a wide spectrum of music genres were included in this study. Personal attributes such as sensation seeking and important demographic characteristics were taken into account. Specifically, the present study addressed four research questions: (a) Is listening to music that contains messages of substance use and violence significantly associated with behaviors of substance use and aggression? (b) Are behaviors of substance use and aggression particularly associated with listening to rap music? (c) Is malt liquor use particularly associated with listening to rap music? and (d) Can any relationships between music preference, substance use and aggression be accounted for by sensation seeking and other predisposing factors?

Method

Sampling and Data Collection

Students from a 2-year community college in the central valley of California were recruited to participate in this study. The data were collected using self-administered paper-and-pencil questionnaires. Community colleges in the US generally have a wider range of ages among their students compared to 4-year colleges. In order to have a study sample compatible with the age range of students in 4-year colleges, students aged 25 or younger were the focus of the study. The registrar indicated that students in this age range mostly attended daytime classes and all new students were required to take an English course. The surveys were thus administered in daytime English classes (8:30 a.m. ~ 5:00 p.m.) over a 2-week period in September 2002. A week before the survey, a letter and a fact sheet describing the study were distributed to all students enrolled in daytime English classes (N = 1,409; 45 class

sessions) to invite them to participate in the study. Trained research staff administered the survey. Prior to beginning the survey, students were reminded that the survey was anonymous and that their participation was voluntary. At the end, participants were paid \$20 each for their participation. In total, 1,226 students took part in the survey for a response rate of 87%.

Participants' ages ranged from 15 to 65. Data analyses for the present study were limited to 1,056 students who were 25 years old or younger. Data for 149 cases were excluded because they were older than 25 years; another 21 cases were dropped because most data were missing ($n = 9$) or because gender or age information was not available ($n = 12$).

Measures

Music listening—Respondents indicated how often they listened to music overall on a 5-point scale (never, less than monthly, monthly, weekly, daily or almost daily). In addition, they were provided with a list of 15 categories of music and were asked to check (yes-no) the type of music they listened to “often.” The list included alternative, Christian, classical, country, heavy metal, jazz, Latin/salsa, top-40/hot-100, punk, rap, rhythm-and-blues/soul/funk/urban (hereafter referred to as R&B), reggae, rock, techno/house, and world music. “Often” was not specifically defined, but relied on respondents' subjective assessment. In the data analyses, we considered a person having a listening preference for a particular genre of music if (a) that person reported listening to music “daily or almost daily” and (b) checked that particular genre of music as a type that he or she listened to “often.” Accordingly, we assumed that this person had been frequently exposed to the messages embedded in that genre of music. Respondents were allowed to check more than one genre of music. An equal weight was given to each of the checked genres.

Alcohol use and alcohol use disorder—The survey used the Alcohol Use Disorders Identification Test (AUDIT, Babor and Higgins-Biddle, 2002) to measure alcohol use and alcohol use disorder. The AUDIT consists of 10 questions covering three domains: hazardous alcohol use (3 questions), alcohol dependence (3 questions), and harmful alcohol use (4 questions). Each question is given a score depending on the response. Typical usage of the AUDIT is to compute a sum score over the 10 items to construct an overall AUDIT score. The possible AUDIT score ranges from 0 to 40. A score of 8 or higher indicates a strong likelihood of alcohol use disorder. Respondents who did not report any alcohol use in the past 12 months did not respond to these questions and were given a score of 0 to each of these questions in the data analyses. The internal consistency of the AUDIT scale, estimated by Cronbach's α , was .84. For the purpose of this study, three alcohol use measures were yielded from the AUDIT: frequency of alcohol use in the past 12 months (a 5-point scale: never, monthly or less, 2-4 times a month, 2-3 times a week, and 4 or more times a week), the sum score, and a dichotomous indicator of potential alcohol use disorder (AUDIT score ≥ 8 vs. < 8). A higher sum score indicates a greater likelihood of having alcohol use disorder.

If respondents reported any alcohol use in the past 12 months, they were also asked about their use of malt liquor in the past 12 months (a 6-point scale: never, less than once a month, once a month, 2-3 times a month, once a week, and more than once a week).

Illicit drug use—Use of two types of illicit drugs was assessed: marijuana and club drugs. Marijuana use was measured by asking respondents to indicate how often during the past 12 months they used marijuana on a 5-point scale (never, once a month or less, 2-3 times a month, once a week, and more than once a week). Club drugs use was measured by asking respondents to indicate how often during the past 12 months they used each of the following three categories of drugs: (a) ecstasy (e.g., MDMA, GHB, Ketamine) (b) amphetamines and methamphetamines (e.g., crystal, ice, speed), and (c) hallucinogens (e.g., PCP, LSD, mushroom), also on a 5-point scale. Cronbach's α was .76 for the three club drug measures.

Aggressive behaviors—Respondents indicated how often in the past 12 months, on a 5-point scale (not at all, 1-2 times, 3-5 times, 6-9 times, and 10 times or more), they engaged in each of five aggressive behaviors: being in a fist fight where they hit someone, being in a gang fight, starting a fist fight or shoving match, threatening someone with a knife or gun, and attacking someone intending to seriously injure that person. Cronbach's α = .80.

Sensation seeking—Five items from the Impulsive Unsocialized Sensation Seeking Subscale of the Zuckerman-Kuhlman Personality Questionnaire (Zuckerman et al., 1991) were selected to construct a short sensation seeking scale. Respondents indicated how much they liked or disliked, on a 4-point scale (dislike very much, dislike, like, like very much), going to wild parties, doing things that are scary, watching a sexy movie, doing “crazy” things just for fun, and doing things on impulse. These items were selected based on their relevance to young people's lifestyle and have been used in our previous studies with youth. Cronbach's α = .77.

Background variables included respondents' age, gender, race/ethnicity, school enrollment status, employment and parents' educational achievement.

Data Analysis

The associations between music genres and behaviors of substance use and aggression were first examined through bivariate analyses. T-test analyses were conducted to examine the associations between music genres and continuous behavioral outcomes. χ^2 test analyses were used to examine the associations between music genres and the dichotomous behavioral outcome, i.e., potential alcohol use disorder (AUDIT score ≥ 8 vs. <8). Music genres significantly associated with these behaviors in the bivariate analyses (either positively or negatively and at $p < .01$) were then included in a structural equation modeling analysis that simultaneously assessed the associations between music preference and alcohol use (frequency of any alcohol use, frequency of malt liquor use, AUDIT sum score), use of illicit drugs (marijuana and club drugs), and aggressive behaviors. Gender, age, race/ethnicity, and level of sensation seeking were included in the model as control variables. The structural equation modeling analysis was conducted using a maximum likelihood method implemented with the EQS software (Bentler, 1985-2004). Latent variables were constructed

to represent constructs that were measured using multiple items (i.e., sensation seeking, club drug use, and aggression). No cross-factor loadings were allowed. No error covariance was added into the model. The exogenous variables (i.e., age, gender, race/ethnicity, sensation seeking, and music genres) and the residuals of the dependent variables (i.e., any alcohol use, malt liquor use, AUDIT sum score, marijuana use, club drug use and aggressive behaviors) were allowed to freely covariate with each other. Because the data were not normally distributed, robust estimates of the standard errors were requested. The comparative fit index (CFI) and root mean square error of approximation (RMSEA) indices were used to assess the model fit (Hu and Bentler, 1999). A value close to .95 for CFI and a value close to .06 for RMSEA were considered as an indication of good model fit. Among the 1,056 cases included in the analyses, 37 cases had some missing data. Missing data were handled through the missing data procedure (i.e., EM imputation) implemented with the EQS.

Results

Sample characteristics

The study sample was 43% male. About two-fifths of the respondents (38%) identified themselves as Caucasian American, 27% as Latino American, 21% as Asian and Pacific Island American (“Asian Americans” hereafter), 5% as African American, and 9% as other, mixed ethnicity or unknown. Their ages ranged from 15 to 25 (mean [SD] = 18.9 [1.80]; 86% < 21). Four-fifths of the respondents (81%) were full-time students and 82% had a paid job during the 12 months prior to the survey. Respondents’ parents, on average, had 12.5 years of education for both father and mother.

Approximately three quarters of the respondents (74%) reported drinking alcoholic beverages of any type in the past 12 months and about two-fifths (38%) reported drinking malt liquor during the same time period. In addition, 29% of the study sample had an AUDIT score of 8 or higher. Two-fifths of the study sample (38%) reported using marijuana and 13% using club drugs in the past 12 months. Moreover, 27% reported being engaged in at least one act of aggressive behaviors in the past 12 months.

Music listening

Almost all respondents (94%) reported listening to music “daily or almost daily.” Rap music appeared to be popular among this sample of students. Of these “daily or almost daily” music listeners, 69% of them reported often listening to rap music. Also popular among this sample were the music genres of alternative (65%), R&B (57%), rock (51%), top-40/hot-100 (37%), techno/house (32%), country (31%), punk (28%), and heavy metal (22%). The rest of the music genres were often listened to by less than 20% of the “daily or almost daily” music listeners: Latin/salsa (19%), reggae (17%), classical (16%), jazz (14%), world (11%), and Christian (0%). On average, respondents often listened to 4.8 (SD = 2.8) genres of music. Very few of them (5%) listened to only one genre of music. Moreover, only three respondents reported listening to music “daily or almost daily” without identifying music genres that they listened to often.

Bivariate analyses

Results from t-tests indicated that frequency of any alcohol use was significantly and positively associated with often listening to music genres of alternative, heavy metal, punk, rap, R&B, reggae, rock, and techno ($p < .01$), but negatively with often listening to world music ($p < .01$). Frequency of malt liquor use was significantly and positively associated with often listening to the music genres of heavy metal, punk, rap, reggae, rock, and techno ($p < .01$). Frequency of marijuana use was significantly and positively associated with often listening to the music genres of punk, rap, reggae, and rock ($p < .01$), but negatively with often listening to world music ($p < .01$). Level of club drug use was significantly and positively associated with often listening to the music genres of rap and techno ($p < .01$). Level of aggressive behaviors was significantly and positively associated with often listening to rap music ($p < .01$), but negatively with often listening to country music ($p < .01$). Results from χ^2 tests indicated that alcohol use disorder was significantly and positively associated with often listening to the music genres of heavy metal, punk, rap, reggae, and rock ($p < .01$). Based on these bivariate analyses, music genres of alternative, country, heavy metal, punk, rap, R&B, reggae, rock, techno, and world were included in the further multivariate analysis.

Structural equation modeling analysis

A structural equation model was specified to simultaneously assess the associations between music genres and behaviors of substance use and aggression, taking into account gender, age, race/ethnicity, and level of sensation seeking. Dummy variables were constructed for gender (1 = male) and age (1 = < 21). Separate dummy codes were generated to represent African American, Asian American, Latino American, and other with Caucasian American being the reference group. Table 1 lists the variables included in the model and presents some descriptive statistics of these variables. The structural model fit the data reasonably (CFI = .090, RMSEA = .041 [90%CI = .038-.045]). Results from this analysis are summarized in Table 2 and described as follows.

Music listening and alcohol use

Often listening to rap music significantly and positively predicted frequency of any alcohol use, frequency of malt liquor use, and the sum score of the AUDIT when age, gender, race/ethnicity, level of sensation seeking and other music genres were taken into account. Similarly, often listening to techno music significantly and positively predicted frequency of any alcohol use, frequency of malt liquor use, and the AUDIT sum score when all other variables were controlled. Moreover, when all other variables were controlled, often listening to reggae music significantly and positively predicted frequency of any alcohol use.

Level of sensation seeking positively predicted frequency of any alcohol use, frequency of malt liquor use, and the AUDIT sum score when all other variables were controlled. Age significantly and negatively predicted any alcohol use and the AUDIT sum score when all other variables were controlled. That is, students under age 21 reported drinking alcohol in general less frequently and scored lower on the AUDIT than did students aged 21-25. Asian race significantly and negatively predicted all three alcohol use variables when all other variables were controlled.

To examine whether greater malt liquor use was simply due to greater overall alcohol use, the equation predicting malt liquor use was re-specified by including frequency of any alcohol use as one of the predictors. This analysis showed that the associations between rap and techno music and malt liquor use were no longer significant when controlling for any alcohol use.

Music listening and illicit drug use

When all other variables were controlled, often listening to rap music significantly and positively predicted frequency of marijuana use. Likewise, often listening to reggae music significantly and positively predicted frequency of marijuana use. In contrast, often listening to world music negatively predicted frequency of marijuana use. Often listening to rap and techno music significantly and positively predicted frequency of club drug use, whereas often listening to country music significantly and negatively predicted frequency of club drug use.

Sensation seeking significantly and positively predicted frequency of marijuana use and frequency of club drug use. Age, gender, and Asian race negatively predicted marijuana use. Being African American was negatively associated with frequency of club drug use when all other variables were controlled. Because the association between marijuana use and gender was counterintuitive, further analyses were conducted. Males reported more marijuana use than did females in bivariate analysis ($p < .01$); however, when levels of sensation seeking were controlled, marijuana use for females became significantly greater than males. That is, frequency of marijuana use was higher among females at equated levels of sensation seeking.

Music listening and aggressive behaviors

When all other variables were controlled, often listening to rap music significantly and positively predicted aggressive behaviors, whereas often listening to rock music significantly and negatively predicted aggressive behaviors. Sensation seeking significantly and positively predicted aggressive behaviors. African American race significantly and positively predicted aggressive behaviors. Lastly, age significantly and negatively predicted aggressive behaviors.

Discussion

To investigate whether young people's substance use and aggressive behaviors were related to their listening to popular music, we conducted a study with a sample of community college students aged 25 or younger. Of the music genres examined in this study, listening to rap music was consistently and positively related to general alcohol use, malt liquor use, and potential alcohol use even after controlling for listening to other genres of music, important demographic characteristics, and sensation seeking. Additional evidence showed that alcohol use was positively associated with listening to techno music and, by a less degree with listening to reggae music. Marijuana use was positively associated with listening to rap and reggae music, whereas club drug use was positively associated with listening to techno and rap music. Aggressive behaviors were positively associated only with rap music. The persistent significant and positive associations between rap music and measures of alcohol

use, problem alcohol use, and illicit drug use were of critical importance. Findings of other music–substance use connections provide additional supports to the idea that substance use is associated with listening to certain genres of popular music.

These findings, however, also suggest that some situational mechanism may be involved. For example, the significant association between marijuana use and listening to reggae music seems logical, given the historical use of marijuana in Rastafarian religious ceremonies (e.g., King and Jensen, 1995; Llosa, 2002). Reggae music, however, has been commonly played in club settings, neighborhood street parties, and open-air concerts in which attendants are mostly not Rastafarians, but the reggae music–marijuana use connection sustains. Moreover, significant associations were found between club drug use, alcohol use, and listening to techno music, which consists of virtually no lyrics. Previous studies report that young people gather in rented settings or night clubs to engage in late-night dance parties that feature electronically produced music (i.e., techno music), light shows, and intense physical dancing (e.g., Randall, 1992a, 1992b; Schwartz and Miller, 1997; Weir, 2000). Drugs like ecstasy and other amphetamines are known to be used at such parties and are believed to facilitate dancing for long hours and also increase enjoyment of the event. As Hunt and Evans (2003) maintain, music listening and dancing are important activities for many young people and often occur in settings where alcohol and drug use plays a part. Prevention efforts focusing on substance use of this nature and in these settings may substantially reduce substance use and related problems among young people.

Our data also showed that listening to certain genres of music were negatively associated with substance use and aggressive behaviors. For example, listening to world music was associated with less alcohol and marijuana use, listening to country music was associated with less club drug use, and listening to rock music was associated with fewer aggressive behaviors when all other variables were considered. The negative associations between music genres and behavioral outcomes were, however, less consistent compared to the positive associations. Moreover, the music genre that was consistently related to lower risks, i.e., world music, was listened to “often” by only one-tenth of the study sample. It thus may be premature to conclude that listening to certain genres of music would help reduce problem behaviors among youth.

Our measure of music listening is limited in many ways. We did not measure the amount of time spent on listening to different genres of music and the attention paid to the lyrics. Neither did we ask the respondents to prioritize their preference for genres of music. Nor could we clearly differentiate the influence of one music genre from another music genre on behaviors because most respondents listened to more than one genre of music. We, however, took into account respondents’ listening to other music genres. The association between a certain music genre and an outcome variable was adjusted for other music genres and other control variables.

Because rap music and musicians have been used to promote malt liquor product, whether consumption of malt liquor was particularly associated with listening to rap music was investigated. The analyses showed that the significant and positive associations between malt liquor use and rap and techno music were no longer significant when frequency of any

alcohol use was taken into account. Thus, greater malt liquor use was due to greater overall alcohol use, which was significantly related to listening to rap music. This finding thus does not ease the concern that the alcohol industry is promoting alcohol use through rap music. Often listening to rap music was consistently predictive of alcohol use and problematic alcohol use in a positive direction.

Consistent with the literature, Asian American students reported lowest levels of alcohol and marijuana use among all racial/ethnic groups even when all other variables were controlled. Interestingly, Asian students were more likely to listen to techno music than Caucasian and Latino students (42% as compared to 24% of Caucasian, 36% of Latino) and just as likely to listen to rap music (65% as compared to 64% of Caucasian and 70% of Latino), but they apparently were not at higher risks for substance use than Caucasian and Latino students. Future studies should examine whether factors that are protective of Asian Americans regarding substance use also help lessen the connections between substance use and music preference.

Although African American students reported similar levels of substance use as students in other non-Asian racial/ethnic groups, they reported significantly more aggressive behaviors (analyses not shown). This racial/ethnic difference in aggressive behaviors was so significant that it remained significant even when all other variables were controlled. Further investigation was conducted and the analyses showed that the β coefficient for the variable of "African American" remained virtually unchanged across three models consisting of predictors of (a) only ethnicity variables, (b) controlling for age, gender, and sensation seeking, and (c) further controlling for music genres. This finding indicates that rap or any other music did not mediate the relationship between being African American and aggressive behaviors. It is important to note that much of the aggression expressed in gangsta rap is violence against women, particularly African American women (e.g., Barongan et al., 1995; Johnson et al., 1995; Wester et al., 1997), which was not measured in our study.

The short sensation seeking scale used in our study was consistently predictive of substance use and aggressive behaviors. Bivariate analyses were also conducted to examine the associations between music listening and sensation seeking (analyses not shown). The results indicated that respondents with higher levels of sensation seeking were more likely to listen to the music genres that were positively associated with substance use and aggression. Conversely, respondents with lower levels of sensation seeking were more likely to listen to the music genres that were negatively associated with substance use and aggression. Although our study may be limited for using a brief sensation seeking scale, our findings are in agreement with Arnett's (1991, 1992) argument that sensation seeking is likely a confounder for the relationship between problem behaviors and music preference. Future studies that examine the connection between music preference and youthful problem behaviors could shed additional light on the role of sensation seeking by using a more sophisticated sensation seeking scale.

In summary, our findings indicate that substance use and aggressive behaviors among young people were significantly associated with listening to certain genres of popular music.

Findings of this study, however, should be interpreted with caution. Due to the cross-sectional nature of the data, it is difficult to make causal inferences about the relationships between music listening and substance use and aggression. It is possible that frequent exposure to rap music significantly contributes to positive values towards substance use and violence. It is also possible that individuals who often listen to rap music view substance use and violence more positively prior to listening to this genre of music; music listening thus at most reinforces these values. Alternatively, substance use, aggression, and music listening may be independent constructs but share common “third factors.” Finally, our study sample may not be representative of all community college students because our study focused on students aged 25 or younger attending daytime classes. Neither may our study findings be generalized to college students in general, as a large proportion of our survey sample (62%) was non-white. Nor may the study findings be generalized to young people who do not attend colleges. Studies with longitudinal designs and general population samples are needed to better understand the causal or dynamic relations between music listening and behaviors of substance use and aggression among young people.

Acknowledgements

The authors thank the anonymous reviewers for their helpful comments on an earlier version of this manuscript.

This study has been funded by National Institute of Alcohol Abuse and Alcoholism grant AA13571. Its contents, however, are solely the responsibility of the authors and do not necessarily represent the official views of National Institute of Alcohol Abuse and Alcoholism.

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TABLE 1

Measures included in the structural equation modeling analysis

Measures	Values	Mean (SD)	Latent Variable Factor Loading (Standardized)
Age	0 = 21-25, 1 = < 21	0.85 (0.35)	
Gender	0 = female, 1 = male	0.43 (0.50)	
Race/Ethnicity			
African American	0 = no, 1 = yes	0.05 (0.22)	
Asian American	0 = no, 1 = yes	0.21 (0.40)	
Latino American	0 = no, 1 = yes	0.27 (0.44)	
Other	0 = no, 1 = yes	0.09 (0.29)	
Sensation seeking			
Like/dislike going to wild parties	1-4	2.72 (0.97)	.62
Like/dislike doing things that are scary	1-4	2.58 (0.84)	.64
Like/dislike watching a sexy movies	1-4	2.77 (0.85)	.54
Like/dislike doing crazy things just for fun	1-4	2.87 (0.86)	.75
Like/dislike doing things on impulse	1-4	2.78 (0.83)	.66
Music (genre) listening			
Alternative	0 = no, 1 = yes	0.64 (0.48)	
Country	0 = no, 1 = yes	0.31 (0.46)	
Heavy metal	0 = no, 1 = yes	0.22 (0.41)	
Punk	0 = no, 1 = yes	0.28 (0.45)	
Rap	0 = no, 1 = yes	0.68 (0.46)	
R & B	0 = no, 1 = yes	0.57 (0.50)	
Reggae	0 = no, 1 = yes	0.17 (0.38)	
Rock	0 = no, 1 = yes	0.51 (0.50)	
Techno	0 = no, 1 = yes	0.32 (0.47)	
World	0 = no, 1 = yes	0.11 (0.31)	
General alcohol use	1-5	2.35 (1.11)	
Malt liquor use	1-6	1.67 (1.07)	
AUDIT sum score	0-40	5.33 (5.93)	

Measures	Values	Mean (SD)	Latent Variable Factor Loading (Standardized)
Marijuana use	0-4	0.79 (1.27)	
Club drug use			
Ecstasy	0-4	0.12 (0.44)	.77
Amphetamines/methamphetamines	0-4	0.08 (0.41)	.66
Hallucinogens	0-4	0.07 (0.33)	.76
Aggressive behaviors			
Being in a fist fight where they hit someone	0-4	0.35 (0.73)	.77
Being in a gang fight	0-4	0.16 (0.53)	.79
Start a fist fight or shoving match	0-4	0.06 (0.37)	.65
Threatening someone with a knife or gun	0-4	0.05 (0.34)	.49
Attacking someone intending to seriously injure that person	0-4	0.08 (0.38)	.75

Structural equation model assessing the associations between music preference and substance use and aggressive behaviors

TABLE 2

	Any Alcohol Use	Malt Liquor Use	AUDIT Score [†]	Marijuana Use	Club Drug Use	Aggressive Behaviors
Age (< 21 = 1)	-.156***	-.053	-.106***	-.073*	-.095	-.109*
Gender (male = 1)	.007	-.002	.012	-.076*	-.070	.071
Race/Ethnicity						
African American	-.047	-.055	-.065	.013	-.060*	.105*
Asian American	-.146***	-.092**	-.156***	-.117***	-.007	.020
Latino American	-.022	-.036	-.031	-.067	-.066	.054
Other	-.044	-.010	-.041	.004	.007	.075
Sensation Seeking	.397***	.273***	.415***	.272***	.198***	.187***
Music Listening						
Alternative	-.005	-.040	.000	-.044	-.009	-.054
Country	.052	-.023	.032	-.062	-.080**	-.013
Heavy metal	-.021	-.013	-.037	-.017	.042	.054
Punk	-.030	-.019	.008	.036	-.055	-.013
Rap	.153***	.120***	.178***	.117***	.069*	.075*
R&B	-.018	-.038	-.045	-.036	-.045	-.040
Reggae	.061*	.065	.055	.129***	.058	.023
Rock	.005	.035	-.035	.003	-.034	-.093*
Techno	.072*	.089**	.064*	-.016	.118*	.049
World	-.053*	-.040	-.042	-.059**	.009	-.037
R ²	.31	.15	.32	.17	.09	.11

[†] Note: The score was log-transformed prior to analysis because of skewedness.

The path coefficients are standardized coefficients.

* $p < .05$,

** $p < .01$,

.100 > *d*

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