



Pirating Youth: Examining the Correlates of Digital Music Piracy among Adolescents

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Abstract

To date, most criminological research on digital piracy has focused exclusively on college student samples. This focus has left a vacuum in researching other populations potentially involved in such piracy. Specifically, adolescents are often associated with other crimes, yet have been severely understudied in relation to digital piracy. The present study seeks to address this by presenting the first multivariate examination of engagement in digital music piracy among middle school and high school students. The study uses a random sample of 8th and 11th grade students in Delaware to predict involvement in music piracy with demographics (sex, race, and class), educational achievement and aspirations, and self-control. Results indicate each of these factors are related to music piracy in this population.

Keywords: Digital Piracy, Music Piracy, Self-Control, Computer Crime.

Introduction

The development of the personal computer has led to widespread use of the Internet, which allows for an exchange of information and the production of behaviors that include crime. One form of crime on the Internet is digital piracy. Digital piracy is the act of copying digital goods that include software, documents, audio (including music and voice), and video for any reason other than to back up without explicit permission from and compensation to the copyright holder using computer technology (Gopal, Sanders, Bhattacharjee, Agrawal, & Wagner, 2004; Higgins, Fell, & Wilson, 2006). The Internet provides a unique opportunity for individuals to participate in this form of criminal

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activity. Wall (2005) argues that the Internet provides a place for individuals to maintain anonymous domestic and transnational communication that is easy to perform, and further suggests that the Internet provides an opportunity for digital piracy to take place away from the copyright holder.

To date, a number of researchers have shown that sub forms of digital piracy (e.g., music piracy) are becoming more pervasive (Gopal et al., 2004; Gunter, 2008; 2009a). Higgins et al (2006) considered music piracy as the illegal uploading and downloading of digital sound without the explicit consent of the copyright holder. Technological advances have helped inadvertently promote this behavior by making the ability to upload and download music easier and faster. Thus, these advances have resulted in a substantial amount of music being transferred illegally. For instance, the International Federation of Phonographic Industries (2008) has estimated that a third of all CDs are pirated. This has resulted in the music industry allegedly losing billions of dollars in potential revenue, though the validity of these estimates is the subject of ongoing empirical debates (Oberholzer-Gee & Strumpf, 2007). Piracy may also result in stagnation in creativity or the desire to develop new music for consumption (Higgins & Makin, 2004).

Music piracy is a legal issue, as the Copyright Act of 1976 made violations of any copyright that included music a criminal act (Koen & Im, 1997). The framers of the 1976 Copyright Act could not have predicted the technological changes that were to take place after its passage. Thus, the No Electronic Theft Act (NETA) was developed to provide an update of the Copyright Act to include using the Internet. The language in the NETA made downloading music from the Internet without paying, or using a peer-to-peer network to upload or download music illegal actions. The NETA provided for several different forms of technological use that include: peer-to-peer networks, LAN file sharing, digital stream ripping, and mobile piracy. The legislation concerning copyrighted material provides for penalties that may be civil (i.e., monetary damages) or criminal (i.e., jail or prison sentences). Though criminal charges are rarely used for cases of music downloading, thousands of civil lawsuits have been filed for the offense. These lawsuits have targeted all ages, including adults, college students, and other individuals as young as 12-years-old (Borland, 2003). Though the RIAA lawsuits ceased in 2008, efforts by entrepreneurial lawyer groups targeting individual downloaders have exponentially increased (Anderson, 2010).

To date, a number of researchers have explored the different correlates of music piracy (Gunter, 2008; 2009a; 2009b; Higgins, 2005; Higgins, Fell, & Wilson, 2006; Higgins, Wolfe, & Ricketts, 2009; Wolfe, Higgins, & Marcum, 2008). These studies have primarily relied on college student samples. This is not a flaw in their logic or reasoning with their samples. After all, these researchers were following previous scholars that have shown that various types of digital piracy (Hollinger, 1993; Hinduja, 2006), especially music piracy, are pervasive among college students. While these researchers have contributed to our understanding of digital piracy, and specifically music piracy, among college students, less attention has been given to the piracy of students in primary, middle, and high school (i.e., the adolescent period). To date, only a few studies have used adolescent samples to explore digital piracy issues (Malin & Fower, 2009, provide a notable exception). Unfortunately, the music piracy landscape is not complete without additional studies using adolescent samples that help provide an understanding of the pervasiveness of their performance of music piracy.

The purpose of the present study is to contribute to the digital piracy, specifically music piracy, literature through analyses of data from two cross-sectional points in adolescence (8th grade and 11th grade) to explore the pervasiveness and correlates of their music piracy. These analyses help understand the racial, biological sex, educational achievement, and socioeconomic level correlates of music piracy of adolescents.

The present study is important for a few reasons. First, this study provides insights in the prevalence of music piracy among adolescents. Second, it provides a preliminary profile of the adolescent music pirate. These are insights and information that are currently not present in the music piracy literature.

Significance of Piracy

To study music piracy, researchers need to understand the significance of the issue. Piracy is a significant form of behavior for three reasons. First, piracy may be detrimental to individuals and the environments where it takes place. For instance, the individual may be liable for civil damages or criminal charges (Koen & Im, 1997). In addition, the location that is providing the opportunity for the piracy to take place may be civilly or criminally liable for allowing the piracy (Koen & Im, 1997).

Second, once music piracy begins, the behavior may continue. That is, the individual that begins piracy may continue their piracy if not sanctioned. This has the potential of putting others at risk for unnecessary sanctions. For instance, other individuals using the same Internet Protocol (IP) address or Internet connection may be at risk for sanctions without their knowledge. Third parties (i.e., stores, cable companies, or other service providers) may be at risk for providing the connection for the illegal activity.

Finally, piracy may have the deleterious effect of normalizing criminal behavior. To be clear, piracy may put the individual into a position where they are later more likely to transition to other forms of crime in comparison to non-pirating youth. Hinduja (2003) argued that these collective behaviors underlie the importance of studying piracy issues. Further, this potential for a relationship with other forms of crime illuminates the necessity to understand piracy at different stages of life. For instance, college students that are performing piracy may be putting their institution at risk. An adolescent that is performing piracy may be at a higher risk of continuing their behavior throughout life or moving on to other forms of crime. Thus, while studying piracy is itself important, it is vitally important to understand the individual that is likely to pirate.

The Problem and Study of Piracy

Piracy among College Students

Early digital piracy research has focused on college students for several reasons. First, music piracy is an emerging form of Internet crime and few resources have been devoted to studying this behavior. Thus, preventative and other types of strategies that may be helpful to reduce this behavior are not present in the empirical literature. College students provide a convenient population that does not drain researchers' resources.

Second, historically the digital piracy literature has shown that college students do perform this behavior; hence, researchers have shown that individuals that are likely to perform digital piracy were college students (Solomon & O'Brien, 1990; Sims et al., 1996). These individuals were likely to be male and 22 years old and major in the disciplines from the liberal arts (Hollinger, 1988, 1993; Husted, 2000). Hinduja (2001)

showed that students likely to digitally pirate were those that used the computer more often. Further, most researchers studying piracy have used college student samples from a theoretical perspective have used college student samples (see Gunter, 2008; 2009a; 2009b; Higgins, 2005; Higgins, Fell, & Wilson, 2006; Higgins, Wolfe, & Ricketts, 2009; Wolfe, Higgins, & Marcum, 2008 for examples). These studies are consistent with Payne and Chapple's (2008) view that college student samples are not only easy and are less of a drain on resources, but they provide important data to glean helpful insights about emerging behaviors and the structure of criminological theories. Few studies have addressed piracy in the general population, though those that have find about a quarter of Internet users engage in file-sharing (Bachmann, 2007). While more is understood about young adult and college students' music piracy, less research has been produced that explores piracy using adolescent populations. Further, only scant research has been produced that explores adolescents and music piracy.

Adolescents and Piracy

While the research to date is growing in the area of digital piracy for college students, the literature using adolescents is less developed. To date, one study has specifically used a methodology that explores adolescents and music piracy. Malin and Fowers (2009) used data from 200 suburban high school students from the New York Metropolitan area. Their results indicated that males were more likely than females to harbor attitudes favorable towards music piracy. Further, those with lower levels of self-control and those who associate with delinquent peers were more likely to have positive attitudes toward music piracy. This indicates that adolescents are likely to have important attitudes about music piracy. While this study made an important contribution to the literature, the study has a few limits that warrant further exploration. First, the study does not explore individuals that are not in high school, which ignores other age groups, such as middle school students, which may be piracy-involved. Second, this study does not provide an indication of the prevalence and incidence of music piracy among these individuals. Rather, their focus was on attitudes toward music piracy instead of actual piracy behavior.

Low Self-Control and Perceptions

Gottfredson and Hirschi's (1990) self-control theory is one of the most cited theories in criminology and criminal justice (Tibbetts & Gibson, 2002). The theory posits that individuals who have been subjected to poor or ineffective parenting (i.e., lack of an emotional attachment with their child; lack of monitoring of the child's behavior; lack of recognition of deviant behavior; lack of discipline) are less likely to develop self-control. Low self-control is an individual's inability to see the long-term consequences of their actions. Those individuals with low self-control are attracted to behaviors that are: immediately gratifying, simple, easy, physical, risky, and lacking empathy for others. These are the characteristics that influence an individual's ability to assess the long-term consequences of a behavior. Thus, crime and deviance are likely because these behaviors have similar characteristics (i.e., immediately gratifying, simple, easy, and short-lived).

Gottfredson and Hirschi's (1990) theory was developed to explain and understand crime and deviance. Their theory also has implications for an individual's perceptions and survey responses.

Gottfredson and Hirschi (1990) argued:

Self-reports reflect factorially complex events as well as criminality. They also reflect the influence of criminality on the task of conceptualizing and disclosing one's behavior (questionnaires and interviews appear to have differential validity depending on the criminality of the respondent). Thus, the higher the level of criminality, the lower the validity of crime measures [Hindelang, Hirschi, & Weis, 1981], as our perspective would predict (p. 249).

Therefore, self-reports are restricted because of an individual's level of self-control.

The empirical literature has found support for the connection between low self-control, crime, and deviance (Pratt & Cullen, 2000). Further, research has shown support for the view of attenuating survey responses. Piquero, MacIntosh, and Hickman (2000) used a sample of college students and modified version of the Grasmick, Tittle, Bursik, and Arneklev (1993) measure to show that self-control does influence survey responses. Higgins (2007) used two college student samples and the original Grasmick et al. measure. He applied the Rasch model to show that self-control influences survey responses. Though it is true that some researchers have shown that low self-control has a link with music piracy (Gunter, 2009b; Higgins, 2007; Higgins et al., 2006; Higgins & Makin, 2004), these studies have included a measure of deviant peer association. Studies that do not include a measure and attempt to test self-control theory may have mis-specified their statistical models. Thus, studies without a measure of deviant peer association should use self-control as a measure of survey attenuation, as will be our use in the present study.

Purpose

The small amount of literature on digital piracy – specifically, music piracy– in adolescence has left a gap in our understanding of those individuals that are most likely to pirate music. Thus, the purpose of the present study is to provide an understanding of adolescent music piracy. In particular, it explores the prevalence of music piracy among adolescents, and the demographic correlates of their music piracy to arrive at a preliminary profile of adolescent music pirates. This study is important because it shows who is likely to be a music pirate. Thus, exploring who may become a music pirate may serve helpful to thwart future Internet criminal behavior. Additionally, some recent research has suggested that college students are not more likely to pirate in the later years of their college career than they are at its inception (Gunter, 2009b). This suggests that most college students pirating music likely started doing so as adolescents before they reached college and young-adulthood. Thus, studying piracy among age groups more likely to have recently initiated into pirating, such as middle and high school students, may lead to substantially different result than studying age groups in which pirating behaviors are already established. Moreover, college students are a subpopulation of young-adults, whereas a greater proportion of adolescents are still in school at younger ages. This means that data from middle and high school students are more likely to be representative of everyone in a particular age group, rather than a specific subgroup (i.e. only those who continue on to college).

Methods

The data used in this study come from the Delaware School Survey (DSS), which is administered to 5th, 8th, and 11th grade Delaware public school and public-charter school

students annually by the University of Delaware's Center for Drug and Alcohol Studies. A census of students is attempted each year; excluding classrooms (less than 15 percent) randomly selected to participate in a different survey instead. All public and public-charter schools in Delaware participated in both years used here. Parental consent is given through passive consent, and students are informed that the survey is voluntary. In 2008, 295 8th grade classrooms participated in the study, with 6,691 students present on their respective classroom's date for survey administration. Of these students, 62 (1 percent) did not consent to participate in the study or were refused parental consent, resulting in a total sample of 6,567 students. For 11th grade, 325 classrooms participated in the study, with 5,774 students present. Of these potential participants, 138 students (2 percent) did not consent to participate or were refused parental consent, resulting in a total sample of 5,636 students. After eliminating participants who did not answer the piracy question from the dataset (less than 4 percent), the final sample sizes for these analyses are 6,249 for 8th grade and 5,470 for 11th grade.⁴

Measures

For the dependent measure, both 8th grade and 11th grade students were asked a single question indicating digital piracy: "How often do you download music without paying for it?"⁵ Responses for the question included never, before but not in past year, a few times in past year, once or twice a month, once or twice a week, and almost every day. For the analyses, this measure will be split into multiple dichotomous measures based on varying timeframes (e.g., ever pirated, pirated in the past month, etc.).⁶ The descriptive statistics for this and other measures are displayed in Table 1.

Independent measures in this study primarily consist of demographic measures. Dummy measures to be used include Female, White, Black, Hispanic, Asian, Other Race/Ethnicity, and Poverty. Each of these are coded as 0 or 1, with 1 indicating that the participant is what the measure describes (e.g., Male=0, Female=1). The race measures are mutually exclusive and exhaustive with each other. For regressions, White will be excluded as the reference category. Due to the difficulty in measuring financial concepts in young populations, the question "Do you get a free or reduced lunch at school?" is used here to measure poverty rather than traditional income indicators.

Analyses will also include measures of educational aspirations and achievement. Aspirations were measured by asking participants, "How much schooling do you think you will complete?" Responses are coded here as high school or less (0) and at least some college (1). Achievement was measured by asking, "What one category best describes your

⁴ These samples are analyzed separately for several reasons. First, 8th and 11th grade are discrete and come from different populations (high school vs. middle school) and there is no reason to believe they are similar. In fact, the results indicate different prevalence rates and correlated between grades/ages. Second, given the large sample sizes in each grade (over 5,000), there is little to gain from further increases in sample size.

⁵ Given that this question does not specify any particular method of transmission (direct downloading from website, peer to peer, etc.) or for any particular purpose (e.g., burning to CDs, iPod use), this measure is not limited to specific methods or purposes beyond illegal Internet-based music downloading. However, because it only specifies "without paying for it," there is a possibility that some legal downloading, such as promotional downloads, may inadvertently be included.

⁶ Lifetime piracy is defined by an individual who provide any response other than "never." Past year piracy is defined by a response other than "never" or "before but not in past year." Past month piracy is defined by a response of "once or twice a month," once or twice a week," or "almost every day." Finally, daily piracy is defined by a response of "almost every day." These dichotomous indicators are therefore not mutually exclusive.

overall grades on your last report card?” Responses included “Mostly D's or F's” (1), “Mostly C's” (2), “Mostly B's” (3), and “Mostly A's” (4).

Unfortunately, few theoretical predictors of crime/deviance were included on the DSS. Of those that were included, most addressed a specific crime other than piracy or general crime/deviance. The survey did, however, contain indicators based on the Zuckerman (1979) sensation seeking scale and are comparable to the impulsivity and risk seeking aspects of a self-control scale (e.g., Grasmick et al., 1993). This scale, therefore, is used in this study as a proxy for self-control. The indicators include: “I sometimes do crazy things just for fun,” “I like wild parties,” “I like to be around people who party a lot,” “I like to try new things even if they scare me or I know it’s something I shouldn’t do,” “I get a real kick out of doing things that are a little dangerous,” and “I like to have new or exciting experiences even if they are illegal.” The responses forms a five-point Likert scale from strongly agree (1) to strongly disagree (5). These six indicators scale together with strong reliability (8th grade $\alpha=.89$, 11th grade $\alpha=.88$). A factor was extracted from these measures using exploratory factor analysis, which combines the measures using the factor loadings into a single standardized measure with a mean of zero and a standard deviation of one.

Table 1: Descriptive Statistics

	8th Grade Mean	11th Grade Mean	8th Grade SD	11th Grade SD	Min	Max
Music Piracy	2.736	3.547	1.966	1.974	1	6
Female	.517	.518	.499	.499	0	1
White	.493	.545	.499	.498	0	1
Black	.263	.260	.440	.439	0	1
Hispanic	.120	.095	.324	.293	0	1
Asian	.031	.029	.173	.167	0	1
Other	.093	.071	.290	.257	0	1
Poverty	.361	.272	.480	.445	0	1
College	.912	.918	.283	.274	0	1
Grades	2.861	2.881	.901	.819	1	4
Self-Control						
Crazy Things	2.644	2.655	1.459	1.380	1	5
Wild Parties	3.015	3.019	1.487	1.452	1	5
People Who Party	3.013	3.057	1.415	1.334	1	5
New Things	3.737	3.663	1.382	1.307	1	5
Dangerous Things	3.438	3.423	1.478	1.395	1	5
Illegal Experiences	3.974	3.689	1.366	1.373	1	5

Analysis

These data will be analyzed in three phases. First, the prevalence of music piracy is calculated for 8th and 11th grade students using percentages. This includes rates in varying timeframes, including lifetime, past year, and past month. Second, these rates are separated

by demographic and other characteristics of the respondents and compared to each other.⁷ These analyses compare responses by gender, race/ethnicity, and other background characteristics. The significance of any differences found is determined using chi-square (or gamma for ordinal predictors) tests. Third, logistic regression is used to explore which measures reveal the likelihood of performing music piracy. Importantly, the amount of missing data for variables ranges from 1 to 7 percent, and a list wise deletion strategy for handling this would remove nearly 15 percent of cases. Consequentially, missing data are addressed using multiple imputations for regressions. This method uses other variables in the dataset to predict a value for each instance of missing data. This is generally preferable to list wise deletion, which removes cases with missing data entirely, and mean replacement, and can cause regression slopes to be overly shallow (Allison, 2002). The SAS version of multiple imputation (PROC MI), used here, has the additional benefit of using maximum likelihood estimations with several iterations. Regression analyses are performed on each dataset produced by each iteration, and the results are averaged to form a final set of coefficients. The coefficients from different models will then be compared using the equality of regression coefficients test (Paternoster, Brame, Mazerolle, & Piquero, 1998).

Results

An analysis of the prevalence of piracy for 8th grade students indicates that 52.2 percent have pirated in their lifetime, 44.0 percent have pirated in the past year, 35.1 percent have pirated in the past month, and 16.1 percent pirate daily. For 11th grade students, those number increase dramatically. Specifically, 72.3 percent have pirated in their lifetime, 63.8 percent have pirated in the past year, 52.8 percent have pirated in the past month, and 25.0 percent pirate daily.

Unfortunately, meaningful comparisons to previous studies of piracy are difficult to make. In addition to the limited number of studies on music piracy overall (rather than software, video, or other forms of piracy), several simply do not report the actual prevalence rates for music piracy (e.g., Gunter, 2008; Gunter, 2009a; Higgins, Wolfe, & Ricketts, 2009; Wolfe, Higgins, & Marcum, 2008). Of those empirical studies that have reported prevalence rates, the rates apply to college undergraduates. Thus, this comparison is made to provide an initial investigation into whether piracy rates increase, decrease, or are stable as students' transition from high school to college. A study by Hohn, Muftic and Wolf (2006) found that 80 percent of undergraduate students had pirated music at least once in their lifetime, which indicates that the prevalence continues increasing after 11th grade (72 percent). Morris and Higgins (2009) reported that past year prevalence for college students was 57 percent, which is slightly lower than 11th grade and indicates that there may be fewer college students downloading than high school students. For past month piracy, a study by Gunter (2009b) reported a relatively low rate of 29 percent. Though this large decrease in comparison to past month high school (53 percent) could be the result of methodological differences, the much higher rate of past year piracy in college (57 percent) suggests it may alternatively indicate that college students continue to pirate, but do so more sporadically than high school students. It is also possible that people

⁷ Due to limited space only lifetime and past month piracy are used for bivariate and multivariate analyses. These variables were selected because they correspond with ever having experimented with piracy and being a current pirate, which are the two most clearly distinguished types of pirates based on the available timeframes.

who pirate are more or less likely to continue onto college than students who do not pirate music.

Table 2 presents the piracy prevalence by the demographics in the 8th grade. Overall, 52.2 percent of all 8th grade students pirated in their lifetime. The data reveal a biological sex difference in piracy in their lifetime, with 55.4 percent of males having pirated versus 49.1 percent of females. The data show limited racial and ethnic differences in piracy in lifetime piracy, with only one significant difference among the five categories. The results also show that economics is an important issue for lifetime piracy. Specifically, 48.9 percent of impoverished individuals, and 54.0 percent of individuals not living in poverty pirated in their lifetime. Individuals that earned lower grades pirated more in their lifetime, as students with A grades are the least likely to have pirated and students with D/F grades being the most likely.

Pirating in the past month naturally has lower percentages of participation across all of the groups, but the patterns seem to be similar. Overall, the data show that 35.1 percent of the individuals pirated. As with the lifetime data, these data show a biological sex difference in piracy in the past month (39.0 percent of males and 31.4 percent of the females). Additional racial/ethnic differences emerge in this timeframe, with Hispanics significantly more likely to pirate than Whites. The data also show that economics are an issue with piracy in the past month, with 32.4 percent of the impoverished individuals pirated in the past month and 36.5 percent of the individuals not living in poverty pirated in the past month. Individuals with lower grades were again more likely to pirate, with 29.2 percent of A students pirating and 43.9 percent of D/F students pirating.

Table 2 also presents the eleventh grade results. The percentages are somewhat higher, as one would expect for most crimes when comparing these age groups. By 11th grade, more than 70 percent of students have pirated in their lifetime. For lifetime piracy, the data show a biological sex difference in piracy, with 77.9 percent of the males and 67.0 percent of the females having pirated. Additional racial/ethnic differences have emerged for lifetime piracy by 11th grade, with White and Asian students significantly more likely to pirate than Black and Hispanic students. The data reveal an economic difference in piracy, in which 66.3 percent of individuals living in poverty pirated in their lifetime, compared to 74.4 percent of those not living in poverty. As before, individuals that earned lower grades were more likely to have pirated in their lifetime, but this effect was not significant for this timeframe for this age.

The results also indicate that 52.8 percent of the eleventh graders pirated in the past month. The data show that 60.4 percent of the males and 45.7 percent of the females pirated in the past month. With regard to racial/ethnic categories, Asian students were significantly more likely to pirate music than White, Black, or Hispanic students. The individuals living in poverty were again less likely to pirate, with only 46.9 percent pirating compared to 54.7 percent of the individuals not living in poverty. The effect of grades is once again significant, with 46.6 percent of A students pirating and 60.4 percent of D/F students pirating.

Table 3 presents the logistic regression analysis that provides an indication of which individuals are most likely to perform music piracy. In the eighth grade, the results shows that female are less likely than males ($b=-0.322$, $\text{Exp}(b) = 0.725$) to pirate music in the past month. With regard to race, Blacks are more likely than Whites ($b=0.316$, $\text{Exp}(b) = 1.372$), and Hispanics are more likely than Whites ($b=0.375$, $\text{Exp}(b) = 1.455$) to pirate music in the past month. The individuals that live in poverty are less likely to pirate music

in the past month ($b=-0.323$, $\text{Exp}(b) = 0.724$). For the educational measure, individuals that have college aspirations are more likely to pirate music ($b=0.252$, $\text{Exp}(b) = 1.287$), yet individuals who have higher grades are less likely to pirate music in the past month ($b=-0.076$, $\text{Exp}(b) = 0.927$). Individuals with higher levels of self-control are less likely to pirate music in the past month ($b=-0.703$, $\text{Exp}(b)=0.495$).

Table 2: Piracy Rates by Demographics

	8th Grade			11th Grade		
	Lifetime	Past Month		Lifetime	Past Month	
Overall	52.2	35.1		72.3	52.8	
Gender						
Male	55.4*	39.0*		77.9*	60.4*	
Female	49.1*	31.4*		67.0*	45.7*	
Race/Ethnicity						
White	52.5	33.6 ^H		73.6 ^B	53.1 ^A	
Black	50.6	35.9		69.4 ^{WA}	52.0 ^A	
Hispanic	52.1	38.6 ^W		70.0 ^A	49.8 ^A	
Asian	57.2	35.1		78.5 ^{BH}	63.3 ^{WBH}	
Other/Mixed	55.7 ^B	38.4 ^W		74.0	54.9	
Poverty						
Yes	48.9*	32.4*		66.3*	46.9*	
No	54.0*	36.5*		74.4*	54.7*	
College Plan						
HS Only	47.7*	34.9		66.7*	50.1	
College	52.8*	35.1		72.9*	53.2	
Usual Grades						
A	46.3*	29.2*		70.0	46.6*	
B	52.8*	34.9*		73.9	54.3*	
C	55.7*	39.4*		71.4	55.2*	
D/F	58.8*	43.9*		74.6	60.4*	
*Difference is significant ($p < .05$) ^W Significantly different from White students ($p < .05$) ^B Significantly different from Black students ($p < .05$) ^H Significantly different from Hispanic students ($p < .05$) ^A Significantly different from Asian students ($p < .05$)						

Table 3: Logistic Regressions Predicting Online Music Piracy

	8th Grade						11th Grade					
	Past Month			Lifetime			Past Month			Lifetime		
	b	SE	Exp(b)									
Female	-.322	.058	.725**	-.237 ^a	.055	.789**	-.474	.058	.623**	-.431 ^a	.065	.650**
Black	.316 ^a	.073	1.372**	.086 ^a	.070	1.090	.208	.073	1.231**	.093	.080	1.098
Hispanic	.375 ^{bc}	.095	1.455**	.109 ^b	.092	1.116	.028 ^c	.104	1.028	.042	.114	1.043
Asian	.317	.165	1.373	.436	.159	1.547**	.643	.176	1.901**	.435	.204	1.546*
Other	.198	.101	1.219	.090	.098	1.094	.093	.114	1.098	.122	.128	1.130
Poverty	-.323	.068	.724**	-.256	.063	.774**	-.293	.070	.747**	-.318	.079	.728**
College	.252	.105	1.287*	.445	.102	1.561**	.365	.109	1.441**	.471	.117	1.602**
Grades	-.076	.034	.927*	-.067	.033	.935*	-.114 ^f	.037	.892**	.022 ^f	.041	1.022
Self-Control	-.703 ^d	.034	.495**	-.703	.032	.495**	-.488 ^d	.031	.614**	-.537	.035	.584**
Intercept	-.574	.134	----	.050	.128	----	.360	.139	----	.810	.151	----
Nagelkerke R ²			.149			.149			.106			.101
* p < .05												
** p < .01												
^a Letters indicate that a significant difference exists in coefficients between models (p < .05)												

Also presented in Table 3 are the logistic regression results for the lifetime correlates of eighth grade music piracy. Six measures are significant correlates of lifetime music piracy. Two measures increased the likelihood of lifetime music piracy in this group, including being Asian (b=0.436, Exp(b) = 1.547) and planning to attend college (b=0.445, Exp(b) = 1.561). Four measures reduce the likelihood of music piracy during someone’s lifetime in 8th grade. Specifically, being female (b=-0.237, Exp(b)=.789), living in poverty (b=-.256, Exp(b)=.774), having higher grades (b=-0.067, Exp(b)=0.935), and having higher levels of self-control (b=-0.703, Exp(b)=0.495) correspond with a decrease in the probability of having ever performed music piracy by the 8th grade.

The logistic regression analysis that explores the correlates of music piracy of individuals in the past month in the 11th grade is also presented in Table 3. It shows that three measures are likely to increase the likelihood of music piracy, including being Black (b=0.208, Exp(b)=1.231), being Asian (b=0.643, Exp(b)=1.901), and planning to attend college (b=0.365, Exp(b)=1.441). The table shows that four measures reduce the likelihood of music piracy, including being female (b=-0.474, Exp(b)=0.623), living in poverty (b=-0.293, Exp(b)=0.747), having higher grades (b=-.114, Exp(b)=0.892), and having higher levels of self-control (b=-0.488, Exp(b)=0.614).

Finally, Table 3 also presents the logistic regression analysis that explores the correlates of music piracy in the individual’s lifetime in the 11th grade. It indicates that three measures reduce the likelihood of music piracy of the individual’s lifetime in the 11th grade. These measures include being female (b=-0.431, Exp(b)=0.650), living in poverty (b=-0.318, Exp(b)=0.728), and having higher levels of self-control (b=-0.537, Exp(b)=0.584). The data show that two measures increase the likelihood of pirating music in one’s lifetime in the 11th grade, including being Asian (b=0.435, Exp(b)=1.546) and having plans to attend college (b=0.471, Exp(b)=1.022).

Discussion and Conclusion

Few would argue that adolescence is not a difficult and important time of life for most individuals. This is a time of exploration and experimentation. Thus, during this period of life, many will perform behaviors that may be criminal. One form of criminal behavior is music piracy. The purpose of the present study is to provide an understanding of

adolescent music piracy. To date, only one study, to our knowledge, exists concerning music piracy of adolescents. Thus, the present study is important because it provides insight into the prevalence of piracy of adolescents. Further, this study also provides insights as to the correlates of music piracy of adolescents.

The results show some interesting patterns. When comparing the prevalence of music piracy, a smaller percentage of 8th graders than 11th graders performed music piracy. The same trend persists for all of the different times (i.e., past year, past month, and daily). One could speculate that 11th graders are likely to have more access to computers. At this stage of life, 11th graders are likely to see computers being more central to their lives; thus, the additional access to computers may provide them with more opportunity to perform music piracy. In addition, music may be more important with this group, the lack of personal income may provide the necessary motivation to perform music piracy. Other forms of crime and deviance also generally see an increase as adolescents' age and move closer to adulthood.

The trends from the overall group seem to persist for the individuals. When comparing the lifetime and past month prevalence of music piracy for 8th and 11th graders, more males than females pirated. This is consistent with the research from college student samples (Hollinger, 1988, 1993; Husted, 2000). This result is consistent with the evidence that suggests that males are more likely to perform criminal acts than females, and is another behavior where an apparent biological sex and possible a sociological gender gap exist in offending.

This is one of the first studies to explore the prevalence of race and ethnicity directly in the context of music piracy. The research here shows that music piracy takes place in all racial and ethnic categories for 8th and 11th graders. Specifically, Asian individuals were the most likely to perform music piracy. This suggests that a cultural difference may be present in music piracy.

The results indicate that piracy is a behavior that more often occurs among individuals not living in poverty. These individuals may be likely to be concerned with music; whereas, the individual that is impoverished is less likely to access a computer or have an Internet connection. The results also indicate that many students who earned better grades in school engaged in music piracy, but were less likely to do so overall. This shows that individuals may be spending more time performing other behaviors, such as piracy, than pay attention academic pursuits.

The measure of self-control produced results consistent with theory and previous research from the college student data. To be clear, across all the periods of life, those with higher levels of self-control were less likely to perform music piracy. As a note of caution, the measures included here are not without flaws. First, the measurement of self-control captured impulsivity and risk seeking, but not the remaining aspects of self-control. A standard measure of self-control may provide different results. Second, our study did not use a measure of delinquent peer association. The use of self-control in this study, however, was not intended to test self-control theory (i.e., it was merely used as a control), so delinquent peer association is not necessary in the present study.

The present study provides some insights into the correlates most likely to reduce or increase the likelihood of music piracy, which is an advance in our understanding given that very little has been produced using these types of samples. While these results are an important advance, the present study has several limits. First, the study comes from only one state. However, the results from the present study are nonetheless novel to the

criminological literature concerning music piracy. Second, the study does not include important measures about computer usage and skill that limit the results. It is conceded that a study that includes measures like this would be stronger, but no such study of this population to date, to our knowledge, exists in the empirical literature. Third, the use of self-control is an unconventional use of the measure and a different way to measure the concept. Yet others have used self-control in a similar manner, and other criminologists use self-control in differing methods and for differing purposes.

Despite the limits, this study contributes to the literature by investigating the prevalence of music piracy by examining the performance of the behavior of adolescents and the important measures have links with the performance of this behavior. Specifically, the results indicate that music piracy is prevalent among adolescents and that gender, race, college aspirations, grades, and poverty all have important links with music piracy. Future studies that use different measures of self-control, delinquent peer association, skill and other theoretical measures from different states will be particularly useful in our understanding.

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