



Crime Specific Neutralizations: An Empirical Examination of Four Types of Digital Piracy

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Abstract

Digital piracy is a major concern for multiple industries. The current work examines music, movie, software, and gaming piracy using a cross sectional survey methodology. The survey was administered to a population of graduate and undergraduate students at two universities (N= 304). Two of the neutralization techniques, Digital Rights Management Software (DRM) defiance and the claim of future patronage, are new to the literature with this study. These two techniques were developed to apply specifically to digital piracy. Overall, the findings for this study were mixed. However, strong support was demonstrated for a number of neutralization techniques; including, the defense of necessity, appeal to higher loyalties, claim of normalcy, and the newly created DRM defiance.

Keywords: Digital Piracy, DRM defiance, Neutralization Techniques.

Introduction

Digital piracy can be defined as "... the illegal act of copying digital goods – software, digital documents, digital audio (including music and voice) and digital video – for any reason other than backup without explicit permission from and compensation to the copyright holder" (Gopal, Sanders, Bhattacharjee, Angrawal, & Wagner, 2004, p. 90). Digital piracy is an issue of growing concern around the world that is negatively affecting multiple industries. According to a study by the International Federation of Phonographic Industries (2011), the music industry has seen a decline in sales of 31% from 2004 – 2010. One potential cause of this loss is digital piracy, which is estimated to cost the music industry 12 billion dollars annually (Siwek, 2007). The cost is estimated to be 20 billion dollars for the movie industry (Siwek, 2006), and 8.3 billion for the software industry (International Data Corporation, 2010). The gaming industry also feels the negative impact of piracy (Kalning, 2007), although specific estimates are not as available for this industry.

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It is difficult to obtain an accurate estimate of the direct cost of digital piracy to industries affected by it. On the one hand, it is not likely that every instance of digital piracy equates a loss sale. Supporting this point Rofael and Waldfogel (2006) found that pirates often consume digital products that they would not normally buy. This may be particularly true for developing nations where people do not have abundant disposable income. However, even if estimates of the cost of digital piracy for various industries are inflated it is clear that digital piracy causes harm. This harm is often further reaching than loss of sales in the entertainment and software industries. A 2010 report by the United States Government Accountability Office (GOA) determined that digital piracy not only negatively affects the industries involved, it also hurts the consumer and economy by stifling innovation. Thus, it is clear that digital piracy is a problem.

The purpose of the present study is to assess the utility of neutralization theory for four distinct subcategories of digital piracy: music, software, movie, and video game. Prior to this study, movie and gaming piracy have only rarely been examined in the literature (Downing, 2011; Gunter, 2009). While many may consider gaming piracy a subcategory of software piracy, as video games are a type of software, there are important distinctions between application software (e.g., Microsoft Office, Photoshop, SPSS, etc.), and gaming software. For instance, these products are designed for different purposes. Application software is often designed to help the user accomplish some creative or administrative task while videogames are designed for entertainment and artistic value. In addition, the retail prices often differ significantly between the two. These differences warrant examining the two acts separately. In addition, two new neutralization techniques are empirically examined; DRM defiance, and claim of future patronage.

Neutralization Theory

Neutralization theory states that individuals are able to engage in criminal behavior by using techniques of neutralization to minimize the guilt from their actions (Sykes & Matza, 1957). Neutralization theory was originally an expansion of the definition concept put forth by Sutherland as part of his differential association theory (1947). In their original work, Sykes and Matza (1957) proposed five techniques of neutralization. The first technique is the denial of responsibility. With this technique, an offender will rationalize that their behavior was due to forces beyond their control. The second technique is the denial of injury. When using this technique, an offender will rationalize that their behavior did not cause any real or lasting damage. The third technique is the denial of the victim. This technique allows the offender to shift the blame from themselves to the victim of their act asserting that the victim is culpable or deserving of the harm done to them. The fourth technique is the condemning of the condemners. When an individual utilizes this technique, they rationalize that those who would disapprove of their actions are hypocrites who likely engage in deviant or criminal behavior themselves. The final technique developed by Sykes and Matza (1957) was appealing to higher loyalties. With this technique the offender claims that the act was permissible because their motivation was to benefit or help a group that they are a member of, such as a social group or their family.

Over time other researchers have added to Sykes and Matza's (1957) original five techniques. Four of these additional techniques were included in this study. The four additional techniques include the claim of normalcy, claim of entitlement, the defense of necessity, and the metaphor of the ledger. Coleman (1985) developed the first two of

these techniques in a study of white-collar crime. With the claim of normalcy, an offender will attempt to justify their behavior by reasoning that most people commonly engage in the behavior. Thus, they minimize the wrongfulness of the act by rationalizing that it is not deviant, and is in fact, the norm. The second technique developed by Coleman was the claim of entitlement. With this technique, an offender will deflect blame for their actions by rationalizing that they deserve to reward themselves from time to time. This technique was originally developed to explain employee theft (Coleman (1985). However, it can potentially be applied to other crimes such as digital piracy.

In another study, Minor (1981) developed the defense of necessity, which portrays the criminal act as crucial to an individual's survival. Using this technique, individuals are able to diminish guilt by portraying their behavior as the lesser of two evils. Finally, Klockars (1974) developed the metaphor of the ledger technique after observing and conducting in depth interviews with a professional fence as part of a qualitative study. Based on these interviews Klockars (1974) discovered that the fence diminished guilt from the criminality of his actions by rationalizing that the good he had done in his life outweighed the bad.

As a testament to its versatility, past research has demonstrated neutralization theories applicability to a large range of deviant and criminal behavior. The theory has been applied to such varied topics as poaching (Elisan & Dodder, 1999), corporate crime (Piquero, Tibbetts, & Blankenship, 2004), terrorism (Bandura, 2004), domestic violence (Mooney, 2007), and genocide (Alvarez, 1997) to name a few. However, the empirical validity of the theory has often been mixed, with many studies demonstrating a weak relationship between techniques of neutralization and crime (Maruna & Copes, 2005). When applied specifically to digital piracy the results are often little better (Higgins, Wolfe & Marcum, 2008; Hinduja, 2007; Ingram & Hinduja, 2008; Moore & McMullan, 2009; Morris & Higgins, 2009). For example, Hinduja (2007) administered a survey to university students measuring their level of neutralization acceptance and past participation in piracy. The results of the study demonstrated a weak relationship between neutralization acceptance and piracy.

However, many studies have been supportive of the theory (Ingram & Hinduja, 2008; Moore & McMullan, 2009). For example, Moore and McMullan (2009) conducted qualitative interviews with a group of forty-four university students who self-identified as digital pirates. They asked the respondents a multitude of questions. Including why they engaged in digital piracy after learning that it is illegal. The most striking feature of this study was that all of the respondents vocalized what amounted to a neutralization technique as their primary reasoning for why they have continued to pirate after learning the behavior is wrong. A study by Holt and Copes (2010) also demonstrates support for the theory. For their study, Holt and Copes (2010) conducted a content analysis of message boards catering to digital piracy, and interviews with digital pirates. Through their interactions with digital pirates Holt and Copes (2010) noted that digital pirates offered many excuses that supported existing neutralization techniques.

New Techniques Specific to Digital Piracy

Two additional techniques were created for this study. Neutralization techniques can be general or specifically tailored to certain crimes (Maruna & Copes, 2005). The two new techniques created for this study were developed specifically for digital piracy. The first new technique is based on the idea that digital piracy is a tool for sampling products. Past research has often demonstrated a correlation between digital piracy and legal

consumption of digital media. More specifically, it is often demonstrated that sampling can lead to greater willingness to buy legitimate products (Gopal, Bhattacharjee, & Sanders, 2006; Bounie, Bourreau, & Waelbroeck, 2006).

Karaganis and Renkema (2013) echoed such findings in a recent study, demonstrating that on average digital pirates buy approximately 30% more digital music compared to people who do not participate in digital piracy. Based on this, it is not hard to imagine that individuals may use the idea of sampling content as a justification for digital piracy. Evidence of this rationalization is demonstrated in the content analysis of piracy centered message boards and interviews with offenders conducted by Holt and Copes (2010). More specifically, some of the digital pirates in the study indicated that their piracy was not wrong, because they were only trying out the items they pirated, and that they would eventually buy the products if they continued to use them. Partially based on these results the new neutralization technique “the claim of future patronage” was created for analysis in this study. With this technique an individual diminishes their guilt of their actions by rationalizing that they are only sampling the material they are pirating.

The second new technique “DRM defiance”, relates to the perceptions of digital rights management software (DRM) by would-be pirates. DRM is fundamentally linked to digital piracy. According to Sinha, Machado, and Sellman (2010), DRM refers to technical systems and other measures utilized by digital publishers and copyright holders to control how a consumer uses their product. In short, DRM is a term used to describe a wide range of access control measures designed to protect digital goods from unauthorized use, or limit the use of a product. It is a tool widely used in the entertainment industry, and comes in many forms.

Many of the digital goods marketed today have some form of DRM. In order for these products to be usable by those who pirate them, the DRM must first be cracked. However, past research has demonstrated that it only takes a small number of technologically knowledgeable individuals to overcome the protections provided by DRM (Haber, Horne, Pato, Sander, & Tarjan, 2003). Once a product is cracked, it can easily be circulated to a wider audience. This is problematic because nearly all forms of DRM are eventually cracked (Myska, 2010). To counter this many companies have responded by creating stricter forms of DRM that can be viewed as excessive by consumers. For example, one form of DRM requires the user to be constantly connected to the internet in order that authentication checks can verify the legitimacy of the product periodically. This may be viewed as particularly problematic if the product is something that normally does not require an internet connection, such as a single player video game.

Recent research in the field of economics has suggested that DRM considered excessive may actually lead to increases in piracy (Sinha, Machoada, & Sellman, 2010). More specifically, more restrictive forms of DRM negatively affect legitimate customers by making the use of said product cumbersome. If a legitimate user’s experience with a digital product is cheapened by DRM, they may begin to see piracy as a viable alternative.

It is clear that DRM plays a large role in the fight against digital piracy, and to some extent may even exacerbate the problem. However, no studies have examined the influence of Digital Rights Management Software (DRM) on piracy from a criminological lens. The current study seeks to rectify this deficiency in the research through the newly created neutralization technique, DRM defiance. This technique is designed to represent the rationalization that digital piracy is permissible when it is used to protest or circumvent DRM.

Methodology

Sampling and Procedure

The sample for this study consists of undergraduate and graduate students from a small southeastern and a medium northeastern university in the United States. College students provide a suitable population for the study of digital piracy for multiple reasons. First, college students have a high level of internet connectivity compared to the general population (Jones, 2002). In addition, college students often demonstrate a high level of technological literacy (Kaminski, Seel, & Cullen, 2003).

Sampling for this study occurred in two waves. For the first wave, a random selection of 1000 students and their email addresses was requested from each institution (for a total of 2000 survey requests sent). The information for each student was then entered into a panel in the web based survey software *Qualtrics*. After the sampling frame was obtained an invitation email was sent to each student inviting them to take part in a survey on digital piracy. Separate emails were sent to the students of the two universities. The email explained the purpose of the study and provided a link to the *Qualtrics* page containing the survey. Students were provided an incentive for participating in the study in the form of a drawing for an Amazon gift card. Upon clicking on the link to the survey, students were directed to an informed consent page. Where students were provided more information about the study, and given an option to proceed with the study after providing consent.

If a student did not respond to the first email a reminder email was sent one week later. On the third week a final email was sent to the students who had not yet responded. Despite these measures only 150 surveys out of the original 2000 (7.5%) were returned. For this reason, a second wave of 1000 students was randomly selected from each of the two universities. For this wave, the same data collection steps as the previous wave were followed. For this wave 206 of the 2000 surveys (10.3%) were returned. In total, 356 students out of the 4000 invited responded to the survey for a total response rate of 8.9%. After removing respondents for missing cases the total sample size for this study rested at 304. Such a low response rate raises the potential issue of non-response bias. However, low response rates are not uncommon in internet surveys (see, for example, Sax, Gilmartin, and Bryant, 2003). In addition, this study may be considered exploratory in some regards; as it is one of only a handful that has examined software and gaming piracy, and two new neutralization techniques were developed for it. For these reasons the sampling issues are not a large problem. However, a sweeping generalization cannot be done on the results.

Variables used in Study

Digital Piracy Measures: As previously stated, four types of digital piracy were examined as outcome variables for this study: music, movie, software, and video game piracy. In addition, each of these variables was measured two separate ways. The first was designed to capture each participant's *willingness* to engage in digital piracy. This was accomplished by providing the respondents with a vignette depicting a scenario that could lead to digital piracy. A different scenario was provided for each type of piracy. The music and movie piracy vignettes were adapted from a study conducted by Morris and Higgins (2010). The software and video game vignettes were original to this study. After each vignette the respondent was presented with a question asking them to indicate how likely it would be that they would engage in digital piracy if they found themselves in the situation described in vignette. Answers to this question were presented in the form of a visual analog scale

with values ranging from 0-100. The bottom end of the scale was anchored with the response “very unlikely”, while the top end was anchored with the response “very likely”. Responses were selected using a sliding bar.

The descriptive statistics for the piracy willingness variables are provided in table 1.³

Table 1. Descriptive Statistics Willingness to Engage in Piracy

Variable	Mean	SD
Music Piracy Willingness	27.12	33.42
Movie Piracy Willingness	20.62	29.46
Game Piracy Willingness	11.08	22.55
Software Piracy Willingness	34.14	37.05

The second way digital piracy was measured was with a self-report measure of *past involvement* for each of the four types of digital piracy. The respondents were asked if they had engaged in each type of piracy over the last month. For example, for the video game piracy measure respondents were asked “Have you downloaded a computer game without the owner’s permission within the last month”. If the respondent answered yes, they were provided with a follow up question asking how many times they had engaged in the behavior over the last month. Table 2 provides the frequencies for of involvement in piracy for the sample.

Table 2. Frequencies for Involvement in Piracy in Past Month Binary Response

Piracy	No	Yes
Music Piracy	224 (73.7%)	80 (26.3%)
Movie Piracy	275 (90.5%)	29 (9.5%)
Game Piracy	288 (94.7%)	14 (4.6%)
Software Piracy	280 (92.1%)	24 (7.9%)
Combined (Movie, Game, Software)	261(85.9%)	43 (14.1%)

³ Each piracy willingness variables was skewed toward the lower end of the scale. This raised concerns regarding the normality of the residuals. Further diagnostics determined that the residuals departed from normality for the movie and game piracy models. This was concerning as non-normality of the residuals can lead to biased significance tests. However, when the sample size of a study is large the negative effects of not meeting this assumption are diminished (Berry, 1993). For this reason, the decision was made to retain OLS regression for the analyses of the piracy willingness variables. This decision was reinforced by results of an ordinal regressions performed on transformed versions of each of the willingness variables (low = 0-32, Medium 33 – 66, High 67 -100). With little divergence the significant variables encountered in the ordinal regression paralleled those of the OLS regressions. The only exception was the gaming piracy model. For the gaming piracy model the ordinal regression differed from the OLS in the following ways. DRM defiance remained significant with a positive relationship to gaming piracy. However, the two other variables found to be significant in the OLS regression (claim of future patronage 1, computer proficiency) were not significant in the ordinal regression. One the other hand, the claim of normalcy gained significance demonstrating a positive relationship with gaming piracy. Due to these differences the OLS regression model representing willingness to commit gaming piracy should be interpreted with care.

Due to a distribution heavily skewed toward zero for many of the past involvement variables, logistic regression was used to test the relationship between the variables examined. In addition, the movie, gaming and software piracy variables were combined for the logistic analyses. This resulted in a total of six outcome variables for this study. Four of these are analyzed using OLS regression and two using logistic regression.

Neutralization Measures: The study included eight previously identified neutralization techniques: the denial of responsibility, denial of injury, denial of a victim, condemning the condemners, an appeal to higher loyalties, the defense of necessity, the metaphor of the ledger, the claim of normalcy, and the claim of entitlement. Much of the survey was adopted from the works of Hinduja (2007), and Morris and Higgins (2010). In addition, the two new techniques specific to digital piracy were included; DRM Defiance and Claim of Future Patronage.

In total, respondents were provided twenty-two statements representing neutralization techniques. Respondents were asked to indicate their agreement with each statement on a four point Likert scale, with responses ranging from “strongly disagree” to “strongly agree”. Neutralization statements representing the same construct were combined into scales, and a Cronbach’s alpha was conducted on each scale. All of the scale variables had a desirable alpha score except for the metaphor of the ledger (.671) and claim of future patronage (.620). For this reason, the individual components of these scales were entered into the analysis as stand-alone variables. In addition, both the denial of the victim and the appeal to higher loyalties were each represented by a single statement. These single item variables were entered into the analysis as dichotomous dummy coded variables (0 = disagreement with neutralizing statement, 1 = agreement). A full neutralization scale was also created, representing the combination of all of the neutralization techniques represented in this study. The Cronbach’s alpha for the full neutralization scale was .892. This suggests that the scale is internally consistent. Two separate analyses were conducted for each outcome variable. One with the neutralization techniques entered as individual predictors and one with the full neutralization scale.

Demographic/ Control Measures: Four control variables were included for this study, based on their significance in past studies. First, respondents were asked to indicate their sex (male = 0, female = 1). Sex has been identified as an important predictor of piracy in many past studies (Skinner & Fream, 1997; Gunter, 2009; Hinduja, 2003). The second control variable was employment status. This variable was included because individuals with less disposable income may be more likely to pirate. This is supported by qualitative statements that digital media is too expensive (Holt, 2010). Employment was used rather than income due to the low range of income observed in college populations. The employment variable originally included three categories, unemployed, part time employment, and fulltime employment. However, the part time and full time employment variables were combined because respondents employed full time only accounted for 13.8% of the sample. This variable was entered into the model as a dichotomous variable (0 = unemployed, 1= employed).

The final two control variables examined each respondent’s computer proficiency and internet use. These two variables were included based on past research that has demonstrated an association between technical ability and digital piracy (Higgins & Ingram, 2009; Hinduja, 2001; Hinduja, 2003; Gunter, 2009). For each of these variables respondents were asked a series of questions related to their computer use. The internet use variables were combined into a 13 point scale, while the computer proficiency

variables were combined into a 10 point scale. These two variables were adopted from a study by Hinduja and Ingram (2009). The descriptive statistics for the demographic variables are provided in table 3.

Table 3. Descriptive Statistics for the Demographic Variables (n = 304)

Variable	Frequency	Percent	Mean	SD
Employment Status				
Not Employed	111	36.5	-	-
Employed	193	63.5	-	-
Sex				
Female	207	68.1	-	-
Male	97	31.9	-	-
Internet Use	-	-	6.6	2.1
Computer Proficiency	-	-	5.7	2.7

Results

1. OLS Regression with Individual Neutralization Techniques as Predictors

The *willingness to commit piracy* variables were analyzed using OLS regression. Table C1 provides the results for all four models with the neutralization techniques entered as individual predictors. For these models each neutralization technique as well as the four control variables was entered into the model. The results for the music piracy model indicate that the variables in the model account for 34.2% of the variance in willingness to engage in music piracy. Six variables were statistically significant. Standardized betas were calculated to rank the impact of each significant variable. The most influential variable was the claim of normalcy (Beta = .296), followed by the defense of necessity (Beta = .240), appeal to higher loyalties (Beta = .203), computer proficiency (Beta = .153), the first metaphor of the ledger variable (Beta = -.150), and the denial of responsibility (Beta = -.141). The results indicate that four of the variables in the model were positively related to music piracy (computer proficiency, defense of necessity, appeal to higher loyalties and claim of normalcy). Meaning willingness to engage in music piracy increased with an increase in computer proficiency and the three aforementioned techniques of neutralization. Unexpectedly, the result also indicated an inverse relationship between music piracy and two of the significant neutralization variables (denial of responsibility, and metaphor of the ledger). In other words, as acceptance of these two neutralization techniques increases willingness to engage in music piracy decreased. This obviously runs counter to neutralization theory.

For the movie piracy model, the predictors accounted for 25% of the variance in willingness to engage in movie piracy. Five variables were significant in the model. The most influential variable was once again the claim of normalcy (Beta = .302). This was followed by the defense of necessity (Beta = .260), appeal to higher loyalty (Beta = .200), DRM defiance (Beta = .200), and the denial of responsibility (Beta = -.174). Each of the significant variables were positively related to movie piracy with the exception of the denial of responsibility which had an inverse relationship. Once again this was an unexpected occurrence.

For the software piracy model the predictors explained 36% of the variance in the model. For this model, the defense of necessity, appeal to higher loyalty, and computer proficiency variables were all positively related to willingness to engage in software piracy. Out of the three, the defense of necessity (Beta = .461) was the most influential. Followed by appeal to higher loyalties (Beta = .258), and computer proficiency (Beta = .124). It is not surprising that the defense of necessity is the most influential variable for this model as expensive software packages are often required as part of college classes.

For the gaming piracy model, the predictors explained 25.6% of the variance in the model. Three variables were significant. The most influential predictor was the newly created neutralization technique DRM defiance (Beta = .326), followed by the first claim of future patronage variable (Beta = -.138) and computer proficiency (Beta = .132). It is not surprising that DRM defiance was the most influential predictor in this model, as the gaming industry often has some of the most controversial DRM. However, it is surprising that the claim of future patronage was inversely related to gaming piracy.

It is interesting to note that a three of the four control variables (gender, internet use, employment status) failed to reach statistical significance in any of the willingness to commit piracy models. However, the fourth control variable (computer proficiency) was statistically significant for music, gaming, and software but not movie piracy. These results are counter to previous research on piracy.

Table C1. OLS Regressions on Willingness to Commit Digital Piracy with Individual Neutralization Techniques

Variable	Music Piracy			Movie Piracy			Software Piracy			Game Piracy		
	b	β	S.E.	b	β	S.E.	b	β	S.E.	b	β	S.E.
Female	6.848	.096	3.987	4.548	.073	3.694	-.516	-.006	4.387	-2.476	-.052	2.815
Unemployed	.948	.014	3.624	-1403	-.023	3.357	-5.577	-.072	3.987	-.033	-.001	2.558
Internet Use	-.017	-.001	.997	1.168	.081	.924	1.581	.086	1.097	.193	.018	.704
Computer Proficiency	1.881*	.153	.759	.028	-.003	.703	1.704*	.124	.835	1.078*	.132	.535
Denial of Injury	-2.283	-.132	1.671	-.724	-.048	1.548	-1.385	-.072	1.838	-.795	-.069	1.172
Denial of Victim	.752	.009	6.037	-3.536	-.050	5.593	1.528	.017	6.643	2.272	.042	4.262
Defense of Necessity	3.591*	.240	1.531	3.371**	.260	1.148	7.695**	.461	1.684	.972	.098	1.080
Appeal to Higher Loyalties	14.853*	.203	4.922	12.661**	.200	4.560	21.081**	.258	5.416	5.435	.112	3.474
Denial Responsibility	-2.881*	-.141	1.385	-3.091*	-.174	1.283	.485	.021	1.524	-1.446	-.106	.978
Condemning of Condemners	-.007	-.001	1.385	-1.090	-.055	1.983	-3.103	-.123	2.355	1.125	.075	1.511
Metaphor of Ledger 1	-13.509*	-.150	5.638	-6.390	-.081	5.224	-11.304	-.112	6.204	-7.445	-.124	3.982
Metaphor of Ledger 2	2.891	-.042	4.113	-2.436	-.040	3.810	-2.958	-.038	4.526	-2.506	-.054	2.903
Claim of Entitlement	.308	.013	2.197	-2.113	-.100	2.035	-1.279	-.047	2.417	-1.127	-.070	1.551
Claim of Normalcy	7.474*	.296	2.227	6.166*	.302	2.031	3.004	.116	2.413	2.907	.186	1.548
Claim of Future Patronage 1	-3.741	-.053	4.224	-4.017	-.066	3.913	-7.574	-.096	4.647	-6.463*	-.138	2.982
Claim of Future Patronage 2	5.928	.086	4.148	.047	.001	3.848	-2.912	-.038	4.564	2.901	.063	2.928
DRM Defiance	2.503	-.107	1.783	4.067*	.200	1.652	1.684	.064	1.962	5.068**	.326	1.259
R ² (Adjusted R ²)	.342 (.298)			.250 (.200)			.360 (.317)			.256 (.207)		

* p < .05, ** p < .01

Music Piracy Model (F = 7.808, df = 17, Sig. = .000) Software Piracy Model (F = 8.439, df = 17, Sig. = .000)

Movie Piracy Model (F = 5.508, df = 17, Sig. = .000) Gaming Piracy Model (F = 5.167, df = 17, Sig. = .000)

2. OLS Regressions with Full Neutralization Scale as a Predictor

Table C2 provides the results for the four OLS regressions with the full neutralization scale (as opposed to the individual techniques) entered as a predictor with the four control variables. The variables in the model explained 24.4% of the variance in music piracy, 13.9% in movie piracy, 21.7% in software piracy, and 15.6% in game piracy. In each model the neutralization scale was positively and significantly related to willingness to engage in piracy. Similar to the results in C1, of the four control variables, only the computer proficiency variable was statistically significant. With the full neutralization scale

however, it was only statistically significant in two (music and software piracy) of the four models.

Table C2. OLS Regressions on Willingness to Commit Digital Piracy with Full Neutralization Scale

Variable	Music Piracy			Movie Piracy			Software Piracy			Gaming Piracy		
	b	β	S.E.	b	β	S.E.	b	β	S.E.	b	β	S.E.
Female	6.740	.094	4.001	3.899	.063	3.704	-9.07	-.011	4.542	-3.691	-.078	2.805
Unemployed	3.735	.054	3.724	-1.94	-.003	4.499	-2.907	-.038	4.227	.680	.015	2.611
Internet Use	.022	.001	1.025	1.210	.084	.949	1.406	.076	1.163	.255	.023	.718
Computer Proficiency	1.669*	.135	.783	-.191	-.018	.725	1.917*	.139	.889	.863	.106	.549
Neutralization	1.209**	.460	.142	.810**	.355	.131	1.142**	.389	.161	.593*	.339	.100
R ² (Adjusted R ²)	.244 (.230)			.139 (.123)			.217 (.202)			.156 (.140)		

Note: The alpha value for the combined neutralization scale was .892

* p < .05, ** p < .01

Music Piracy Model (F = 17.213, df = 5, Sig. = .000) Software Piracy Model (F = 14.786, df = 5, Sig. = .000)

Movie Piracy Model (F = 8.585, df = 5, Sig. = .000) Gaming Piracy Model (F = 9.877, df = 5, Sig. = .000)

3. Logistic Regressions with Individual Neutralization Techniques as Predictors

Table C3 provides the results for the two logistic regressions with the neutralization techniques entered as separate variables. The outcome variable for the first model was whether the respondent had engaged in music piracy over the last month. The second model represented whether the respondent engaged in any of the other types of digital piracy over the last month (movie, software, game). In the music piracy model, standardized Betas for each significant variable were calculated by multiplying the logit coefficient of a variable by the variables standard deviation (Roncek, 1997). Using this method it was determined that condemning of the condemners (Beta = -1.192) was the most influential variable in the model. This was followed by DRM defiance (Beta = .924), claim of normalcy (Beta = .695), denial of injury (Beta = .683), appeal to higher loyalties (Beta = .636), denial of victim (Beta = -.483), and employment status (Beta = -.461). The results indicated that the odds of engaging in piracy increased with increases on the DRM defiance, denial of injury, appeal to higher loyalties, and claim of normalcy scales. In addition, it was found that the unemployed had lower odds of committing music piracy compared to the employed. This was an unexpected result. It is possible that given the population, employment is not an optimal measure of wealth, as some college student who work may have less disposable income than those who do not. Unexpectedly, respondents who disagreed with the statement representing a denial of the victim had lower odds of committing music piracy, and piracy odds decreased with increases on the condemning of the condemners scale. Contrary to the willingness models, the computer proficiency variable was not statistically significant.

For the combined piracy model (movie, software, gaming), seven variables were statistically significant. Out of the seven significant variables, the most influential on the model was Condemning of Condemners (Beta = 1.655). This was followed by internet use (Beta = 1.268), the claim of normalcy (Beta = 1.12), DRM defiance (Beta = .923), Female (Beta = -.681), Appeal to Higher Loyalties (Beta = .591), and claim of future patronage (Beta = .57). The odds of committing piracy decreased with higher levels of acceptance of the condemning of the condemners technique while the odds of committing piracy increased with reported increases on the internet use, appeal to higher loyalties, claim of normalcy, and DRM defiance scales. The results also indicated that females had lower odds of committing these types of piracy compared to males. However, employment status and computer proficiency were not statistically significant. Finally,

contrary to the findings in the gaming willingness model, individuals who agreed with the first future patronage variable were more likely to engage in piracy.

Table C3. Logistic Regression for Actual Music and Combined Piracy Models

Variable	Music Piracy				Movie, Gaming, and Software Piracy			
	b	Exp(B)	Roncek Beta	S.E.	b	Exp(B)	Roncek Beta	S.E.
Female	-.399	1.087	-.184	.383	-1.462*	.232	-.681	.552
Unemployed	-.955*	.385	-.461	.382	.140	1.151	.067	.502
Internet Use	.075	1.078	.155	.094	.585*	1.795	1.268	.171
Computer Proficiency	-.090	.914	-.188	.070	-.154	.857	-.415	.104
Denial of Injury	.355*	1.425	.683	.164	.135	1.145	.255	.216
Denial of Victim	-1.190*	.304	-.483	.563	-.881	.414	-.361	.721
Claim of Necessity	.121	.762	.696	.139	.209	1.232	.476	.185
Appeal to Higher Loyalties	1.390*	4.017	.636	.422	1.290*	3.362	.591	.633
Denial Responsibility	-.180	.835	-.294	.149	-.202	.817	-.323	.209
Condemning of Condemners	-.796**	.451	-1.192	.221	-1.111**	.329	-1.655	.313
Metaphor of Ledger 1	-.474	.623	-.177	.491	-.972	.378	-.364	.685
Metaphor of Ledger 2	.499	1.647	.241	.377	-.238	.788	-.114	.516
Claim of Entitlement	-.154	.854	.214	.204	.145	1.156	.202	.277
Claim of Normalcy	.475*	1.607	.695	.213	.764*	2.147	1.12	.297
Claim of Future Patronage 1	.403	1.497	.191	.369	1.203*	3.329	.57	.518
Claim of Future Patronage 2	.298	1.347	.144	.378	.081	1.084	.037	.539
DRM Defiance	.646**	1.908	.924	.179	.665*	1.944	.923	.221
Cox and Snell R ²	.265				.291			

* p < .05, ** p < .01

Music Piracy Model (Chi-square = 84.102, df = 17, Sig. = .000)

Movie, Gaming, Software Piracy Model (Chi-square = 93.723, df = 17, Sig. = .000)

4. Logistic Regressions with Full Neutralization Scale

Table C4 provides the results for the two logistic regressions with the full neutralization scale entered as a predictor. The neutralization scale was the only significant variable for the music piracy model. Results indicate that it is positively related to music piracy involvement over the last month. For the combined movie, software and gaming model, the neutralization scale, internet scale and gender were significant. The internet scale was the most influential variable in the model (Beta = 1.128). This was followed by the neutralization scale (.8001) and gender (-.466). The neutralization and internet scales were both positively related to piracy involvement, meaning that individuals who demonstrate higher levels of neutralization acceptance and internet use are more likely to engage in piracy. The gender variable demonstrated that males have higher odds of participating in piracy compared to females. Similar to the previous model, computer proficiency was not statistically significant in either model.

Table C4. Actual Piracy Full Neutralization Logistic Regression

Variable	Music Piracy				Movie, Gaming, and Software Piracy			
	b	Exp(B)	Roncek Beta	S.E.	b	Exp(B)	Roncek Beta	S.E.
Female	-.220	.802	-.101	.327	-.959*	.383	-.446	.427
Unemployed	-.518	.595	-.248	.319	.426	1.531	.205	.416
Internet Use	.108	1.114	.223	.087	.545**	1.725	1.128	.140
Computer Proficiency	-.041	.959	-.111	.065	-.088	.916	-.237	.090
Neutralization Scale	.067**	1.070	.855	.014	.063**	1.065	.8001	.017
Cox and Snell R ²	.130				.177			

* p < .05, ** p < .01

Music Piracy Model (Chi-square = 37.977, df = 5, Sig. = .000)

Movie, Gaming, Software Piracy Model (Chi-square = 53.178, df = 5, Sig. = .000)

Discussion and Conclusion

The purpose of this study was to examine the relationship between four distinct forms of digital piracy and neutralization theory. However, the results for the control variables also bear discussion and will be discussed first. Each of the control variables were significant in at least one of the models examined except for employment. For this reason, future studies should consider excluding employment as a control variable, and replacing it with a more suitable measure of income. Also, the future studies of digital piracy should consider including computer proficiency and internet use as potential controls. Both of these variables were found to be important predictors of piracy. It is not surprising that technologically savvy individuals' pirate or state a willingness to pirate more than others. Future studies should consider exploring the relationship between technological proficiency and piracy in detail to determine what factors contribute to this relationship. Gender was only significant in the movie, gaming and software piracy involvement models. This may indicate that males only pirate certain types of media more than females. Future studies should examine this possibility further.

For the neutralization variables, the overall results were mixed as some of the neutralization techniques were inversely related to digital piracy (metaphor of the ledger, condemning of condemners, claim of future patronage, and denial of responsibility). Most would consider this counter to the predictions set forth by the theory. However, this can potentially be explained by the notion that not all neutralization techniques will apply equally well across all forms of deviant or criminal behavior (Minor, 1981). For example, the metaphor of the ledger was originally applied to the act of fencing stolen goods (Klockars, 1974). Such mental calculations of right and wrong may make more sense for a professional fence rather than a digital pirate. To alleviate this problem, future research should examine digital piracy using both qualitative and quantitative methodologies. The use of qualitative methodologies should continue, such as those carried out by Holt and Copes (2010), and Downing (2011). The results of such studies can be used to identify which neutralization techniques are most relevant to digital piracy.

Although some of the results from this study ran counter to the predictions set forth by neutralization theory, many others supported it. The defense of necessity, appeal to higher loyalties, and claim of normalcy variables were all significant predictors of piracy in multiple models. In addition, the variables included in the models explained a relatively high amount of the variance in piracy participation.

This study is the first to examine four distinct types of digital piracy. The results of the study indicate that there are some differences in neutralization acceptance across piracy type. In addition, some techniques appear to have a stronger impact on certain types of piracy. This is apparent when examining the beta values of the variables in the willingness models. It makes sense that the impact of individual neutralization techniques varies between piracy types due to the differences in the products that are being pirated. For example, DRM defiance was significant in multiple models but its influence varied between models. However, it was the most influential in the gaming piracy model. This makes sense as computer games often have a high level of DRM. Another good example is the defense of necessity, which was influential in the software piracy models. This makes sense as people often need various software programs for work and education. Based on these diverse findings between piracy types future studies should continue to examine these concepts separately. In addition, futures studies should continue to examine gaming piracy as a separate construct.

One of the most interesting findings for this study was the positive association of the DRM defiance variable with multiple types of piracy in both the actual and willingness models. Notably, it was the most influential variable for the model of gaming piracy willingness. These findings lend support to the notion that criminologists should explore crime specific techniques of neutralization in addition to existing techniques. In addition, future studies of digital piracy should consider including DRM defiance, especially if they examine gaming piracy. The findings for this variable suggest that excessively restrictive DRM may actually cause more harm than good. This is a topic that future studies should explore in greater detail.

On the other hand, the second newly created technique, the claim of future patronage, was rarely significant. In addition, the findings for this variable were inconsistent when significance was found. For the software willingness model it was inversely related to digital piracy. However, when examining actual piracy the opposite was true. These inconsistent results may be due to the forward looking nature of this neutralization technique. It is the only neutralization technique that excuses guilt based on future behavior. This may lead to this variable interacting differently with scenario based measures that also look at future behavior. Based on these results, it is clear that this variable needs further refinement before it is used in any future studies.

Limitations and Directions for Future Research

This study should be interpreted in light of its limitations. The most salient issue for this study is the possibility of non-response bias due to the low response rate on the survey. Although this survey mode provides the potential to reach a true random sample of a college population, these benefits are potentially negated by the low response rate. Web based surveys are often cited for producing significantly worse response rates than their paper based counterparts (Couper & Miller, 2008). Given the poor response rate in the current study, the results will need to be verified by future research. However, given this study's focus on adding new techniques of neutralization specific to piracy and on testing four types of piracy in the same study, the results should be viewed as exploratory and provide direction for further testing. Future studies should avoid internet based surveys unless the population under study cannot be reached through more traditional survey modes.

A second limitation was the relatively low alpha levels for two of the technique of neutralization scales (metaphor of ledger and claim of future patronage). This indicates that the operationalization of these variables should likely be refined in the future. Future operationalizations of the metaphor of the ledger should only include statements that clearly reflect justifying negative actions based on past virtues. The second statement used for this study does not clearly meet this criterion. Thus, it may not be a good representation of the variable. For the future patronage variable, future studies should consider developing the two statements included in this study as separate constructs since they seem to be capturing different things based on their low alpha level. For the current study, the survey was pre-tested with college undergraduate and graduate students to ensure question comprehension. However, due to the variety of constructs involved, future studies of neutralization techniques should split the focus of pre-testing to also include a focus on operationalization of key constructs.

A third limitation of this study was its sole focus on American college students. Because this study only focused on college students, it is not possible to generalize to non-student

populations. College students may have more access to computer technology / the internet along with more computer proficiency than their non-student peers making them ideal candidates for digital piracy. In the current study, both of these variables were found to be significant predictors of either willingness to commit or actual piracy. Conversely, college students may also have greater stakes in conformity, be of higher socioeconomic standing, and be less likely to commit any type of offense compared to their counterparts. To gain greater understanding of the factors that influence decisions to commit digital piracy, future studies should examine populations other than college students including, primary school students, and working age adults. Future studies should also examine international populations, as digital piracy is a concern around the world. Issues of internet coverage across the population and computer proficiency are likely to vary across countries.

Despite the limitations, this study demonstrates the utility of examining crime specific neutralization techniques when examining digital piracy. Future studies should continue to explore the new neutralization variable identified in this study, particularly the DRM defiance variable, while simultaneously developing new areas of inquiry. This would be best accomplished through mixed method designs. Using a mixed method approach researchers could identify unique or emerging neutralization techniques through qualitative designs, which could be followed up with quantitative designs for a more epical analysis. In addition, future studies should continue to examine multiple forms of digital piracy as separate dependent variables, and continue to include gaming piracy as a separate variable.

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