



Copyright © 2020 International Journal of Cyber Criminology – ISSN: 0974-2891
January – June 2020. Vol. 14(1): 267-282. DOI: 10.5281/zenodo.3753014
Publisher & Editor-in-Chief – K. Jaishankar / Open Access (Authors / Readers No Pay Journal).

This is a Diamond Open Access article distributed under the terms of the
Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International
(CC-BY-NC-SA 4.0) License, which permits unrestricted non-commercial use,
distribution, and reproduction in any medium, provided the original work is properly cited.



Gender, Self-Control, and Opportunity: Applying the General Theory of Crime to Online Harassment

Jaeyong Choi¹

Angelo State University, United States of America

Nathan E. Kruis²

Pennsylvania State University, United States of America

Abstract

Previous empirical work has shown that the inclusion of low self-control in multiple regression models reduces the statistically significant independent effects of gender on general crime and delinquency to non-significant levels, even when controlling for known theoretical predictors of crime. In support of Gottfredson and Hirschi's (1990) claims, this work has also shown that opportunity interacts with low self-control in explaining deviant behavior. To date though, the relationship between gender, opportunity, and self-control in explaining cybercrime is still relatively unknown. Using a sample of Korean Adolescents (N = 1,091), the current study attempts to fill these gaps in the literature by examining the effects of opportunity and low self-control in relation to gendered disparities in rates of online harassment. Inconsistent with the theory, findings suggest that girls and boys report similar levels of self-control and that LSC interacts with opportunity to negatively predict online harassment. However, consistent with general theory of crime, results show that opportunity and LSC are significant predictors of online harassment in separate gender models while controlling for a host of other theoretical predictors of crime and delinquency.

Keywords: Self-Control, Opportunity, Gender, Online Harassment, Adolescent.

Introduction

Bullying has historically been a long-standing problem for youth around the world (Payne & Hutzell, 2017). The *digital age* has provided a new platform for bullies, giving them an opportunity to harass their victims almost continuously in the realm of cyberspace (Choi & Kruis, 2019). Cyberbullying, defined as the act of intentionally, aggressively, and repeatedly using digital mediums (i.e., cell phones, game consoles, tablets, and computers) to

¹ Department of Security Studies and Criminal Justice, Angelo State University, 2601 W. Avenue N San Angelo, Texas 76909, USA. Email: jaeyong.choi@angelo.edu

² Department of Criminal Justice, Pennsylvania State University, 3000 Ivyside Park, Altoona, PA 16601, USA. Email: nek132@psu.edu

harass individuals or groups of students, is a particularly serious problem among Korean adolescents (Lee, Kim, & Chang, 2013). In fact, more than 76% of Korean youth have reported being the victim of some form of cyberbullying (Korea Internet and Security Agency, 2012), which is roughly 4 times the number of students reporting being victims of traditional (e.g., face-to-face) bullying (Yun & Kim, 2016).

While cyberbullying can take several forms, arguably, the most common form is what has been referred to as *online harassment* (Baek, Losavio, & Higgins, 2016). Online harassment can be defined as problematic internet behaviors involving name-calling, threats of assault, and other direct or indirect efforts to socially embarrass a person (Baek et al., 2016; Finkelhor, Mitchell, & Wolak, 2000). Data from the *Korean Institute of Criminology* indicate that about 35 percent of Korean students have admitted to harassing at least one other student online in the past 6-months (Choi, 2009). These data show that of all the cybercrimes and analogous behaviors assessed by the *Korean Institute of Criminology* (e.g., illegal downloading [31.2%], cyber theft [4.9%], and spreading rumors [4.7%]) online harassment is the most commonly reported analogous behavior Korean students engage in (Choi, 2009).

Like all crimes though, there appears to be a gender gap in perpetration rates of online harassment, with prior research indicating that male students in Korea are more likely to engage in online harassment than female students (Baek et al., 2016). Interestingly, while extensive efforts have been made to assess the utility of criminological theories for explaining the gender gap in forms of traditional crimes and delinquency (i.e., property and violent, see, for example, Burton, Cullen, Evans, Alarid, & Dunaway, 1998; LaGrange & Silverman, 1999; Morash & Moon, 2007; Tittle, Ward, & Grasmick, 2003), only a few studies have tried to assess the gender gap in computer crimes (see Baek et al., 2016; Higgins, 2006; Moon, McCluskey, McCluskey, & Lee, 2013), and those that have done so suffer from several methodological problems (i.e., measurement issues or lack of control variables) that may limit the validity of results. Thus, there appears to be a dearth of quality research assessing theoretical explanations for the gender gap in computer crimes.

The goal of the present study is to extend this small line of research by exploring the interrelationship between sex, low self-control, and opportunity using data from a sample of adolescents in South Korea. Specifically, this project tests the utility of Gottfredson and Hirschi's (1990) *general theory of crime* for explaining gendered differences in rates of online harassment among Korean youth. In advancing the literature, our work also includes measures of social bonding and social learning variables as controls, thus offering a more comprehensive test of theoretical explanations for the gender gap in computer crimes than that in prior research. Moreover, and consistent with the recommendations set forth by Moon et al. (2013), our statistical models provide a better test of the external validity of *general theory of crime* by estimating the gendered effects of LSC in separate models for boys and girls. As such, our models provide more accurate estimates of theoretical predictors by better controlling for countervailing effects than models used in previous studies.

Literature Review

1. *General Theory of Crime*

In their landmark book, *A General Theory of Crime*, Gottfredson and Hirschi (1990) introduced what has become known to mainstream criminologists as self-control theory. Like all control theories, the most distinctive difference between self-control theory and



traditional positivistic theories of crime is related to each theory's assumption concerning the etiology of crime (Kornhauser, 1978). Positivistic theories of crime (i.e., General Strain Theory, Social Learning Theory) assume that people are born to follow social norms, and they are pushed or pulled into lives of crime by strains or through socialization. Conversely, control perspectives adhere to the traditional Durkheimian belief that morality is entirely a social construct, and thus what society labels as “deviance” or “crime” will naturally occur if social controls are not developed early in the life course (Gottfredson & Hirschi, 1990; Hirschi, 1969). Simply put, control theorists assume that humans are naturally motivated to commit crime (Akers, Sellers, & Jennings, 2017). As such, they are most interested in explaining why some people refrain from committing crime. To Gottfredson and Hirschi (1990) the answer is simple—self-control.

Gottfredson and Hirschi (1990) argued that the primary cause of delinquency is the absence of self-control, which is developed by the age of 10 and remains relatively stable throughout the life course. Unfortunately, though, the theorists did little in terms of actually defining the concept of self-control; they instead discussed the traits of persons who, according to Gottfredson and Hirschi, exhibit low self-control. Such persons are impulsive, insensitive, short-sighted, lazy, and drawn to nonverbal and physical tasks. In essence, they are thrill-seekers who seek instant gratification.

Gottfredson and Hirschi (1990) saw low-self-control (LSC) as the product of ineffective childrearing practices. According to them, parents have four duties that directly affect their child's development of self-control (Gottfredson & Hirschi, 1990; Higgins, 2006). First, all parents develop good emotional bonds with their children. Second, parents monitor children's behavior. Third, parents assess patterns of behavior to determine if it is deviant or not. Fourth, good parents enact non-corporal punishments to correct a child's behavior. Parents who fail to rear their children at any of these four steps effectively will produce children who lack self-control, and consequently, are more likely to engage in delinquency.

It is important to note that self-control theory also expresses elements of rationality and opportunity. In fact, Gottfredson and Hirschi (1990) noted that “all human behavior can be understood as the self-interested pursuit of pleasure or the avoidance of pain.” They assumed that people are rational in that they weigh the potential pleasures of an act against the potential consequences (pain). The rational person will invariably choose the act that produces the greatest amount of pleasure and the least amount of pain. Those who exhibit LSC require no motivation other than opportunity to commit crime and the belief that pleasures of crime will outweigh the consequences (Higgins, 2006). This is because “the insensitive person has fewer negative consequences to consider; the less intelligent person also has fewer consequences to consider (has less to lose)” (Gottfredson & Hirschi, 1990, p. 95). Essentially, those with LSC are incapable of seeing the long-term consequences of their actions, which is one reason why, when presented with opportunity, they commit more delinquent acts than those with higher levels of self-control.

2. Gender, Crime, and General Theory

Research has continually documented a gender gap in criminal offending (see Baek et al., 2016; Higgins, 2006; LaGrange & Silverman, 1999; Moon et al., 2013). Specifically, males have been found to commit more types of traditional street crime, including both property and violent offenses (Blumstein, Cohen, Roth, & Visser, 1986; Choy, Raine, Venables, & Farrington, 2017; LaGrange & Silverman, 1999; Lauritsen, Heimer, & Lynch, 2009; Morash & Moon, 2007). Further, research has also noted this gap in the realm of substance use

(Carliner et al., 2017; Shannon, Havens, Oser, Crosby, & Leukefeld, 2011) and white-collar crime (Holtfreter, 2015; Steffensmeier, Schwartz, & Roche, 2013). More recent work has indicated that males are more likely to commit computer crimes, including software piracy (Choi & Yun, 2019; Higgins, 2006; Hinduja, 2003; Hollinger, 1993; Moon, McCluskey, & McCluskey, 2010; Sims, Cheng, & Teegen, 1996), illegal use of RRN networks (Moon et al., 2010; Moon et al., 2013), and online harassment (Baek et al., 2016).

Explaining this gap in offending has been one of the main goals of criminologists for some time now, although approaches to doing so vary greatly. Feminist criminologists—including Adler and Adler (1975), Simon (1975), Hagan, Gillis, and Simpson (1990), and Chesney-Lind (1997)—have advocated for the creation of gendered specific theories of crime. Others have argued that traditional, general, theories of crime provide the best explanation for gendered differences in criminality (see Akers et al., 2017; Baek et al., 2016; Gottfredson & Hirschi, 1990; Hickman, Piquero, Lawton, & Greene, 2001; Higgins, 2006; Hirschi, 1969; Moon et al., 2013; Smith & Paternoster, 1987). In fact, the very utility of these theories as a *general theory* lies in their external validity, or their ability to explain contextual variations in crime (Akers et al., 2017).

Gottfredson and Hirschi (1990) have stated that gendered differences, “are invariant over time and space” and can be attributed to the products of, “substantial self-control differences between sexes” (pp. 145-147). They believe that parents apply behavioral standards differently to their male children than to their female children. Girls have fewer opportunities to engage in delinquency during adolescence because they are monitored more by their parents, and they are punished more severely if they are caught acting out aggressively. As such, females develop higher levels of self-control because they have greater exposure to parents and have higher expectations placed on them. Conversely, when young men act out, it is often attributed to *boys being boys*. As a result, males develop lower levels of self-control, and subsequently, commit more delinquent acts.

Empirical research has confirmed this hypothesis by showing that in general females have higher levels of self-control and fewer opportunities to commit crime (Burton et al., 1998; Keane, Maxim, & Teevan, 1993; LaGrange & Silverman, 1999; Tittle et al., 2003). Tittle et al.’s (2003) work was one of the first to show that the inclusion of low self-control in multiple regression models reduced the statistically significant independent effects of gender on general crime and delinquency to non-significant levels, even when controlling for known demographic predictors of crime (i.e., race and age) and elements of social bonding. Their work also found behavioral measures of self-control to negatively and statistically significantly predict deviance for both sexes even when controlling for variables found to positively predict (e.g., race, age, social bonds) crime and deviance in previous studies. Their findings provide support for self-control being a “master variable” that explains misbehavior independent of gender, age, and race, and other known correlates of deviance (p. 429).

Other research has indicated that elements of opportunity and LSC and their interaction mediate the relationship between gender and delinquency in full (Burton et al., 1998) or in part (LaGrange & Silverman, 1999; Tittle et al., 2003). Thus, there is both theoretical and empirical evidence suggesting that *general theory of crime* can explain the gender gap in general criminal offending. However, when focusing specifically on the gender gap in computer crime there has been much less empirical research, and the available evidence on the utility of theory has produced mixed results.

For instance, in the first study aimed at examining the utility of LSC variables for explaining gendered differences in computer crimes, Higgins (2006) found males to be more



likely to engage in software piracy and that LSC partially mediated the effects of gender on software piracy. However, Higgin's analysis did not include any measures of opportunity, and his results were based on a convenience sample of 392 college students. Thus, these findings are not generalizable. Similar work by Moon et al. (2013) found LSC to predict both male and female use of RRN networks, but it failed to mediate the relationship between gender and computer crimes.

More recently, Baek et al. (2016) examined the influence of gender, LSC, and opportunity in predicting online harassment using a sample of Korean youth ($N = 1,091$). Results from their analysis supported propositions outlined in *general theory of crime* by showing the LSC, gender, and opportunity significantly influenced online harassment in mixed models. Further, models divided by gender only partially supported interaction effects, thus supporting the claim made by Moon et al (2013) that self-control theory should be tested across gendered models. Unfortunately, though, their measure of opportunity was created from an ordinal scale reflecting responses to a statement asking students if their parents had a strict time rule for when they could use the computer. A better estimate of opportunity would be a continuous variable assessing the number of hours of daily computer use (Moon et al., 2010). Moreover, their analysis did not include other theoretical predictors—such as measures of differential association, strains, or social bonding—that research has shown to contribute to delinquency even after controlling for LSC (Burton et al., 1998; Choi, Kruis, & Kim, 2019; Higgins, 2006; Lee, Moak, & Walker, 2016; Moon et al., 2013). As such, while the available work in this area seems to indicate that self-control theory may be able to account for the gender gap in crime, there is a need for empirically sound research examining the utility of *general theory* for explaining the gender gap in computer crimes.

3. Online Harassment

There are several reasons why it is important to examine cyberbullying behaviors such as online harassment. First, victims of online harassment often experience a myriad of negative consequences, including psychological distress (Finkelhor et al., 2000; Ybarra & Mitchell, 2004) and suicide ideation (Van Geel, Vedder, & Tanilon, 2014). In fact, about one-third of youth who have experienced online harassment report symptoms of depression (Finkelhor et al., 2000). Second, research has also found perpetrators of online harassment and other forms of cyberbullying to experience similar problems (Fenaughty & Harré, 2013). For instance, bullying in general, and online harassment, in particular, have been found to be associated with numerous other social problems including anxiety, depression, academic stress, substance use and delinquency (Arseneault, 2017; Meltzer, Vostanis, Ford, Bebbington, & Dennis, 2011; Yang et al., 2013; Ybarra & Mitchell, 2004). Moreover, youth who engage in bullying behaviors are more likely to develop long-term health problems and suffer from mental illnesses later in life than adolescents who do not engage in such types of behaviors (Stuart & Jose, 2014). Thus, it is important to search for predictors of such behaviors so we can develop policies to better combat them and prevent these negative consequences from occurring.

As noted above, online harassment is a serious problem for Korean youth, with a substantial number of students reporting being victims or perpetrators of online harassment (Choi, 2009; Korea Internet and Security Agency, 2012). Estimates suggest that adolescents in South Korea experience more incidents of cyberbullying perpetration and cyber-victimization than adolescents living in other countries (Lee et al., 2013). This is likely a

result of disproportionately high rates of internet use by South Korean adolescents (Heo, Oh, Subramanian, Kim, & Kawachi, 2014), providing more opportunities for online harassment. As such, South Korea offers a proper context for studying this unique social problem and to further examine the utility of *general theory* for explaining the gender gap in computer crimes.

Current Study

As noted above, to date, there have been few attempts by researchers to use the general theory of crime to explain gendered differences in cybercrime, and the work that is available suffers from serious methodological flaws, including a lack of effective controls and failure to separate statistical models by gender. Thus, the goal of this current study is to build upon this scant body of literature by applying the general theory of crime to online harassment in South Korea, with a specific focus on examining the interrelationship of gender, opportunity, and LSC. In doing so, this is one of only a few assessments of the utility of the general theory of crime for explaining gendered differences in rates of offending among Asian youth, and, to the best of our knowledge, it is the first to explore this relationship in the realm of cybercrime. Further, consistent with recommendations noted by Moon et al. (2013), the statistical models employed in this analysis provide one of the best available tests of the external validity of general theory of crime by estimating the gendered effects of LSC in separate models for boys and girls. Thus, our models depict more accurate estimates of theoretical predictors by better controlling for countervailing effects than models used in the prior works.

Data and Methods

a. Data

The data used for this study were derived from a sample of 1,091 (585 males and 505 females) adolescents in South Korea. The Korean Institute of Criminology (KIC) conducted a research project from August to September in 2009 as part of the law-related education program for the Elementary Education Act. The youth participating in the study were elementary and middle school students. Students were asked to complete the survey during regular class time. The survey questionnaire included two categories of questions related to a) their offending and victimization experiences in the online environment and b) perceptions of different aspects of online activities.

To develop a representative sample of young adolescents (Grades 5 – 7) in Seoul, South Korea, a stratified multistage cluster sampling was used. First, Seoul was stratified into 4 regional districts, and then elementary schools and middle schools were randomly selected in each region. After choosing a sample of 12 elementary schools and 12 middle schools throughout the city (a total of twenty-four schools), researchers randomly selected one classroom (about 25–30 students) per each grade from every school. Researchers visited these classes, and a group-administered questionnaire was used in the classroom. The final sample size was 1,091.

b. Dependent Variable

Online harassment. According to Finkelhor et al. (2000), online harassment refers to, “threats or other offensive behavior, sent online to the youth or posted online about the youth for others to see” (p. 11). To measure online harassment, respondents were asked to

answer the question, “Have you frightened someone by abusive or aggressive language while playing computer games or using the internet over the last six months?” The response to the question was measured on a binary response scale (1 = yes, 0 = no). When respondents participated in this action within the last 6 months, they were instructed to write down the number of times in which they had engaged in online harassment.

c. Independent Variables

Low self-control. According to Gottfredson and Hirschi (1990), those low in self-control are “impulsive, insensitive, physical (as opposed to mental), risk-taking, short-sighted, and non-verbal” (p. 90). Moreover, low self-control is theorized to explain all known variations in crime and analogous behaviors among individuals and various sociodemographic categories except for age. In the current study, we used four items that represent several traits of low self-control that have been used in previous research using this data (Baek et al., 2016; Choi & Yun, 2019). By using a five-category response set, students were asked to rate how strongly they agreed or disagreed with the following four statements: (a) “I tend to do my job without a plan,” (b) “I always act out on a whim,” (c) “I behave impulsively in many cases,” and (d) “I act as soon as possible no matter what happens later.” The responses to these items were summed to create a low self-control measure. The scale was coded so that higher scores reflect lower levels of self-control. The reliability coefficient for the scale was very high ($\alpha = .81$).

Opportunity. According to Gottfredson and Hirschi (1990), opportunity is a critical condition that enables individuals with low self-control to engage in deviant behaviors. Online harassment can happen only when harassers have virtual access to the internet. While parental control of youth’s computer usage can be an indirect measure to capture opportunity to engage in online harassment (Baek et al., 2016), a more direct way to measure opportunity can be the number of hours using computer, especially the amount of time spent on a computer other than for studying (Moon et al., 2010). Respondents were asked how much time they spent on computer on average per day. They were asked to exclude the amount of time spent on computer for studying. The response options for this item ranged from 1 (less than 30 minutes) to 6 (more than 4 hours).

d. Control Variables

Four variables that are known to be significantly linked to conventional delinquent behaviors were included in the analysis to prevent potential spuriousness in multivariate analyses. These factors include family structure, the number of close friends, parental management, and moral beliefs regarding online harassment. Single-parent household was defined as whether or not the participant was living with a single parent (1 = living with both parents = 0, living with either mom or dad = 1). The number of close friends was used as a control variable because prior research has shown a significant relationship between peer attachment and juvenile delinquency (see Choi & Kruis, 2019; Connell, Morris, & Piquero, 2016). As such, respondents we asked to report the number of close friends they had (0 = none, 1 = one, 2 = two to three, 3 = four to five, 4 = six and more).

Three questions regarding parental supervision were used to measure parental management: (1) “My parents set strict time rule about using computers,” “My parents observe me while I am using the computer,” “My parents know what I usually do when I am using the computer.” Response categories followed a 5-point scale ranging from never

(1) to very much so (5). These items were summed to create the parental management scale. Moral beliefs about online harassment include two questions about the respondent's endorsement of online behaviors involving online harassment. These two items were based on the scenario describing Ji-eun, a girl who posted abusive comments under Byeong-su's photo on a website.³ Ji-eun also copied and pasted bad comments about Byeong-su to other websites. Respondents were asked to read the story and to answer two questions related to it. Students were asked how ethical they thought Ji-eun's online behaviors (i.e., posting abusive comments, copying and passing bad comments) were on a 5-point Likert-type scale (1 = certainly wrong) to 5 (certainly right). The two items were reverse coded and summed so that a higher score represents a higher level of moral standards regarding online harassment.

Analytical Plan

To test the applicability of the general theory of crime in explaining the gender gap in online harassment, the analysis proceeded in three steps. First, we conducted independent-samples t-tests to determine whether male and female students differed significantly in terms of low self-control, opportunity, and involvement in online harassment. The original answers involving online harassment were highly skewed (skew = 15.841). To alleviate the non-normal data issue, the responses to measure online harassment were transformed into a binary variable (1 = engaged, 0 = none). We then performed a series of logistic regression models to examine the direct effects of gender, low self-control, and opportunity on online harassment. Finally, separate logistical regression models were estimated for male and female students.

Results

Table 1 provides the results from independent-samples t-tests comparing the mean levels of involvement in online harassment, low self-control, and opportunity for male and female students. There were significant gendered differences in levels of online harassment. Male students engaged in online harassment more frequently compared to female students. It deserves mentioning that the difference in the levels of low self-control between male and female students was not statistically significant, which is contrary to the prediction of the general theory of crime. However, male students spent more time on their computer for other reasons than studying. The results also indicated that male students had more close friends and that they subjected to greater parental supervision in comparison to female students. However, female students reported a higher level of moral beliefs compared to male students.

³ [Situation] *Ji-eun's abusive comments on the Internet*: Ji-eun saw the photo of Byeong-su who she does not like on the Internet. She left abusive comments under his photo in the website. She visited the website a few days later and saw other bad comments about Byeong-su's childhood. She copied and passed these bad comments to the website where her classmates often visit.

Table 1. Descriptive Statistics of Online Harassment and Independent Variables: Gender Subgroups

	Males (n = 586)		Females (n = 505)		t test
	M	SD	M	SD	
Online harassment	8.993	51.803	.984	9.551	3.048**
Low self-control	9.663	3.440	9.900	3.567	-1.108
Opportunity (The amount of time spent on computer use)	2.779	1.184	2.312	1.144	6.578***
The number of close friends	3.582	.681	3.450	.792	2.903**
Parental management	9.007	2.638	8.444	2.913	3.304***
Moral beliefs	9.539	.911	9.657	.739	-2.356*

Note: * $p < .05$, ** $p < .01$, *** $p < .001$.

To test the applicability of the general theory of crime to online harassment, a multivariate logistic regression model was estimated. Table 2 presents the results from this analysis. Results show that gender was not a significant factor predicting online harassment. Unlike different types of conventional delinquency (e.g., Burton et al., 1998; LaGrange & Silverman, 1999), male students were equally likely to engage in online harassment once other variables were held constant. However, as predicted by the general theory of crime, low self-control was a significant direct predictor of online harassment, indicating that students with low self-control were more likely to engage in online harassment, independent of other theoretical predictors. The results also indicate that opportunity is a significant predictor of online harassment. For example, youths who spent more time on a computer were more likely to engage in online harassment. The direction and magnitude of the effects of low self-control and opportunity were consistent with the theory. Additionally, the results revealed that those with high morality were less likely to engage in online harassment, independent of low self-control and opportunity compared to their peers.

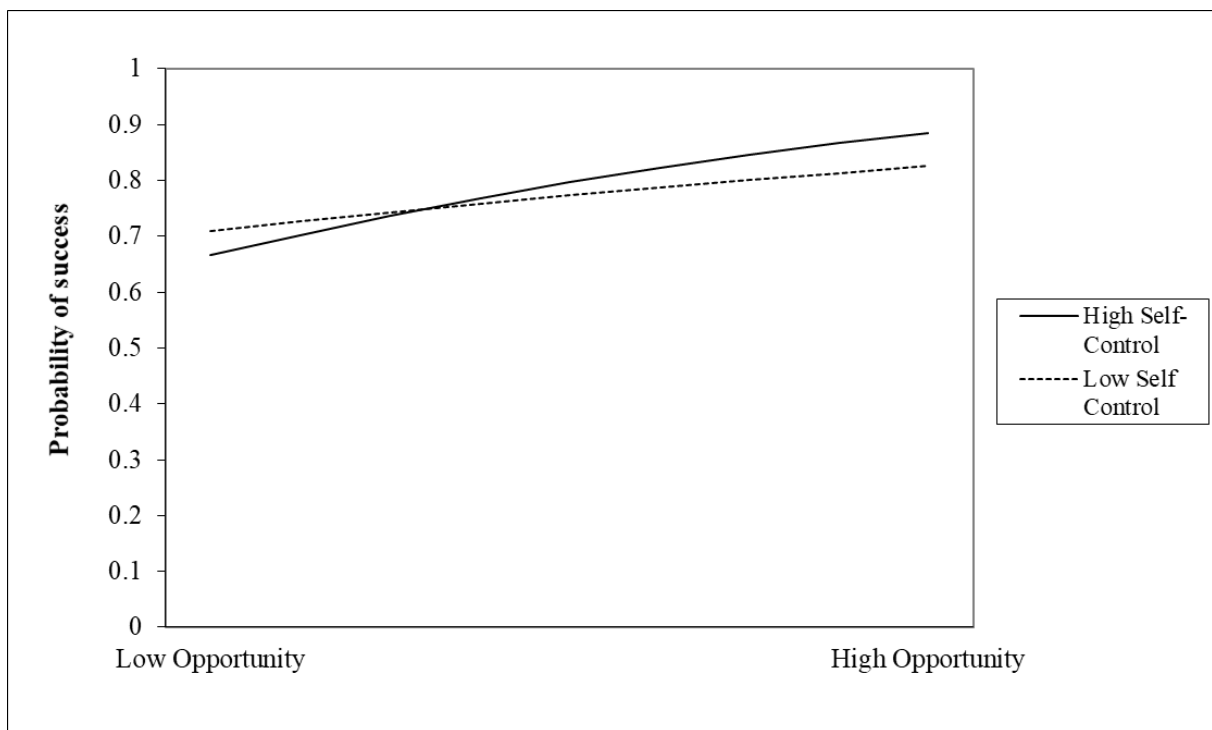
To examine the interaction effect between low self-control and opportunity as noted in previous literature (Tittle et al., 2003), we entered a mean-centered measure of low self-control and opportunity into the regression model (Aiken, West, & Reno, 1991). The interaction term for low self-control and opportunity was statistically significant in predicting online harassment. Figure 1 shows that the impact of low self-control was diminished for students who spent more time on computer. While Gottfredson and Hirschi (1990) suggest that those with low self-control are more likely to engage in delinquency when they are presented with more opportunities, these findings demonstrate that when opportunity is provided, low self-control may not be a required condition for online harassment to occur.

Table 2. Logistic regression results predicting online harassment for combined sample

	Online Harassment		
	<i>b</i>	(<i>SE</i>)	EXP(<i>b</i>)
Female	-.973	(.239)	.378
Low self-control	.144***	(.035)	1.155
Opportunity (The amount of time spent on computer use)	.379***	(.102)	1.461
Single-parent household	1.016**	(.332)	2.763
The number of close friends	.052	(.149)	1.053
Parental management	-.060	(.042)	.942
Moral beliefs	-.431***	(.109)	.650
Low self-control × Hours of daily computer use	-.051*	(.025)	.950
Nagelkerke R ²	0.212		

Note: **p* < .05, ***p* < .01, ****p* < .001.

Figure 1. Interaction plot (Low self-control × Opportunity) for online harassment model



Tables 3 and 4 present the results for online harassment for male students and female students separately. Both low self-control and opportunity were significant predictors of online harassment across gender. Moral beliefs were also predictive of online harassment among both male and female students. Although the interaction effect between low self-control and opportunity was not statistically significant, this is likely a result of the reduced sample size due to splitting the sample based on gender.



Table 3. Logistic regression results predicting online harassment for males

	Males		
	<i>b</i>	(<i>SE</i>)	EXP(<i>b</i>)
Low self-control	.143***	.044	1.154
Hours of daily computer use	.338**	.119	1.402
Single-parent household	1.442***	.418	4.227
The number of close friends	-.142	.191	.868
Parental management	-.025	.052	.976
Moral beliefs	-.250*	.126	.779
Low self-control × Hours of daily computer use	-.056+	.032	.945
Nagelkerke R ²	0.172		

Note: **p* < .05, ***p* < .01, ****p* < .001.

Table 4. Logistic regression results predicting online harassment for females

	Females		
	<i>b</i>	(<i>SE</i>)	EXP(<i>b</i>)
Low self-control	.172**	.062	1.188
Hours of daily computer use	.447*	.214	1.564
Single-parent household	-.110	.696	.896
The number of close friends	.370	.259	1.448
Parental management	-.101	.078	.904
Moral beliefs	-1.020***	.224	.361
Low self-control × Hours of daily computer use	-.035	.045	.966
Nagelkerke R ²	0.276		

Note: **p* < .05, ***p* < .01, ****p* < .001.

Discussion and Conclusion

A recent line of theoretical and empirical research has begun to examine the validity of criminological theories in understanding online deviance (e.g., Higgins, Fell, & Wilson, 2006; Higgins, Wolfe, & Marcum, 2008; Holt, Bossler, & May, 2012; Morris & Higgins, 2010). Their findings have shown that many traditional criminological theories also exhibit utility in explaining various types of online deviance, including digital piracy (e.g., Higgins & Makin, 2004), illegal use of private information (e.g., Moon et al., 2013), and online harassment (e.g., Baek et al., 2016). Specifically, Gottfredson and Hirschi's general theory of crime has been subjected to a vast array of empirical research on online deviance, and this line of research has yielded consistent findings that support the theories utility for explaining online crime and deviance (Burruss, Bossler, & Holt, 2013; Moon et al., 2010). To date though, this research has neglected to address one critical argument presented by general theory—its utility for explaining the gendered gap in online crime. For years, researchers have debated whether the general theory of crime can explain a gender gap in conventional crime (LaGrange & Silverman, 1999). Similarly, criminologists have also reported conflicting results regarding the role of opportunity in relation to low

self-control and traditional crime(see Burton et al., 1998; Tittle et al., 2003). Comparatively, these issues have received scant attention with respect to online crime. As such, this article addresses these gaps in the literature by applying general theory of crime to cybercrime with a focus on examining the impact of opportunity and gender on online harassment.

Specifically, we used data from a large sample of South Korean youths to examine the applicability of the theory across sexes. In support of self-control theory, we found gendered differences in rates of online harassment, noted in bivariate models, dissipated once measures of low self-control were included in multivariate modeling. However, while we expected to find significant gendered differences in levels of self-control, our findings found similar levels of self-control across male and female participants. Broadly speaking though, the empirical results in our analyses were supportive of Gottfredson and Hirschi's generality argument that low self-control can explain not only conventional crime but also a wide range of acts analogous to crime. For instance, in support of the theory, our findings indicated that measures of low self-control significantly predicted online harassment independent of measures of opportunity, morality, and peer association. Results from the separate gendered analysis showed that self-control influences rates of online harassment equally across sexes. Further, opportunity was found to significantly and positively associated with online harassment, as Gottfredson and Hirschi suggested. It is worth mentioning that these effects also retained statistical significance even after accounting for parental supervision, family structure, the number of close friends, and moral beliefs.

Also, consistent with the propositions laid out by the theory was our finding of a significant interaction effect between low self-control and opportunity. However, the observed relationship was not in the direction hypothesized by the theorists. Specifically, results indicate that greater opportunity reduces the effect of low self-control on online harassment. That is, as opportunity increases, those with low self-control actually engaged in fewer incidents of online harassment. These findings indicate that opportunity may have a greater impact on cyber harassment than low self-control. Future research should explore this finding more thoroughly.

Another finding of the current study is that the effects of low self-control and opportunity were observed across gender. Gottfredson and Hirschi assert that lower female rates of crime and delinquency can be attributed to higher self-control and fewer opportunities. Support for this argument was not unequivocal. First, when comparing the mean levels of low self-control between male and female students, no significant difference was found. However, male students spent substantially more time on a computer compared to female students, and this difference could partly explain the gender gap in online harassment.

It is important to note that one of the key contributions of this research was its inclusion of several important control variables to prevent the potential spuriousness issue to assess the interrelationship between gender, low self-control, and opportunity. To date, the only other study that has investigated the interrelationship between these variables is Baek et al.'s (2016). Those authors also provided overall support for general theory of crime. However, they did not incorporate other known correlates of crime as control variables in their analysis, thus this work offers a more robust test of the theory. Our study has shown that family structure and moral beliefs are important variables associated with

online harassment. Accordingly, there remains a need to investigate the relationship between gender, low self-control, and opportunity while considering these factors.

The results presented in this paper tend to support the notion that the predictive power of low self-control holds true regardless of cultural settings (Vazsonyi & Belliston, 2007; Yun, Kim, & Kwon, 2016), at least among the sample of South Korean youth and using attitudinal measures of low self-control. That said, the current findings should be read with some caution due to the following limitations. First, while our measure of low self-control was used in previous work, its validity is not sufficiently established. Future work should consider incorporating both attitudinal and behavioral measures of low self-control. Second, our study relies on cross-sectional data, which fails to control for the temporal order between the independent (low self-control and opportunity) and online harassment. Although Gottfredson and Hirschi (1990) argue that once self-control is formed in the early stage of life, the level of self-control remains stable over the life course, opportunity can still vary, and this can influence the potential of online harassment. It is important for future research to examine how opportunity may condition the impact of low self-control on online harassment between males and females using longitudinal data. Third, given that our data were collected using schools located in Seoul, South Korea as a sampling frame, generalization of our findings to other settings should be refrained. Future work should test components of LSC across time and place.

Despite these limits, our study shows that general theory of crime applies to online harassment. In particular, low self-control and opportunity can increase the likelihood of involvement in online harassment, and these relationships are not limited to males or females. Our study, however, revealed that the interrelationship between gender, low self-control, and opportunity may be at odds with what Gottfredson and Hirschi (1990) assume. Our findings suggest that this interrelationship should continue to be the focus of empirical tests and theoretical discussions regarding the general theory of crime.

References

- Adler, F., & Adler, H. M. (1975). *Sisters in crime: The rise of the new female criminal*. New York: McGraw-Hill.
- Aiken, L. S., West, S. G., & Reno, R. R. (1991). *Multiple regression: Testing and interpreting interactions*. Sage.
- Akers, R. L., Sellers, C. S., & Jennings, W. G. (2017). *Criminological theories: Introduction, evaluation, and application* (7th ed.). New York, NY: Oxford University Press.
- Arseneault, L. (2017). The long-term impact of bullying victimization on mental health. *World Psychiatry, 16*(1), 27-28.
- Baek, H., Losavio, M. M., & Higgins, G. E. (2016). The impact of low self-control on online harassment: Interaction with opportunity. *Journal of Digital Forensics, Security and Law, 11*(3), 27-42.
- Blumstein, A., Cohen, J., Roth, J. A., & Visser, C. A. (1986). *Criminal careers and career criminals* (Vol. 1). Washington, D.C.: National Academy Press.
- Burruss, G. W., Bossler, A. M., & Holt, T. J. (2013). Assessing the mediation of a fuller social learning model on low self-control's influence on software piracy. *Crime & Delinquency, 59*(8), 1157-1184.

- Burton, V. S., Cullen, F. T., Evans, T. D., Alarid, L. F., & Dunaway, R. G. (1998). Gender, self-control, and crime. *Journal of research in crime and delinquency*, 35(2), 123-147.
- Carliner, H., Mauro, P. M., Brown, Q. L., Shmulewitz, D., Rahim-Juwel, R., Sarvet, A. L., Hasin, D. S. (2017). The widening gender gap in marijuana use prevalence in the US during a period of economic change, 2002–2014. *Drug and alcohol dependence*, 170, 51-58.
- Chesney-Lind, M. (1997). *The female offender: Girls, women, and crime*. Thousand Oaks: Sage Publications.
- Choi, J., & Kruis, N. E. (2019). The effects of life domains on cyberbullying and bullying: Testing the generalizability of Agnew's integrated general theory. *Crime & Delinquency*, 65(6), 772-800. doi: 10.1177/0011128718814860
- Choi, J., Kruis, N. E., & Kim, J. (2019). Examining the links between general strain and control theories: An investigation of delinquency in South Korea. *Asian Journal of Criminology*, 14(3), 201-221.
- Choi, J., & Yun, I. (2019). Do moral beliefs condition the impact of low self-control on digital piracy? *Deviant Behavior*, 1-13. doi: 10.1080/01639625.2019.1701885
- Choi, S. (2009). *A study of cybercrime among juveniles*. Seoul, Korea: Korean Institute of Criminology.
- Choy, O., Raine, A., Venables, P. H., & Farrington, D. P. (2017). Explaining the gender gap in crime: The role of heart rate. *Criminology*, 55(2), 465-487.
- Connell, N. M., Morris, R. G., & Piquero, A. R. (2016). Predicting bullying: Exploring the contributions of childhood negative life experiences in predicting adolescent bullying behavior. *International Journal of Offender Therapy and Comparative Criminology*, 60(9), 1082-1096.
- Fenaughty, J., & Harré, N. (2013). Factors associated with distressing electronic harassment and cyberbullying. *Computers in Human Behavior*, 29(3), 803-811.
- Finkelhor, D., Mitchell, K. J., & Wolak, J. (2000). *Online victimization: A report on the nation's youth*. Alexandria, VA: National Center for Missing and Exploited Children.
- Gottfredson, M. R., & Hirschi, T. (1990). *A General Theory of Crime*. Stanford, CA: Stanford University Press.
- Hagan, J., Gillis, A. R., & Simpson, J. (1990). Clarifying and extending power-control theory. *American Journal of Sociology*, 95(4), 1024-1037.
- Heo, J., Oh, J., Subramanian, S., Kim, Y., & Kawachi, I. (2014). Addictive internet use among Korean adolescents: a national survey. *PLoS One*, 9(2), e87819.
- Hickman, M. J., Piquero, A. R., Lawton, B. A., & Greene, J. R. (2001). Applying Tittle's control balance theory to police deviance. *Policing: An International Journal of Police Strategies & Management*, 24(4), 497-520. doi: 10.1108/eum0000000006497
- Higgins, G. E. (2006). Gender differences in software piracy: The mediating roles of self-control theory and social learning theory. *Journal of Economic Crime Management*, 4(1), 1-30.
- Higgins, G. E., Fell, B. D., & Wilson, A. L. (2006). Digital piracy: Assessing the contributions of an integrated self-control theory and social learning theory using structural equation modeling. *Criminal Justice Studies*, 19(1), 3-22.
- Higgins, G. E., & Makin, D. A. (2004). Self-control, deviant peers, and software piracy. *Psychological reports*, 95(3), 921-931.

- Higgins, G. E., Wolfe, S. E., & Marcum, C. D. (2008). Digital piracy: An examination of three measurements of self-control. *Deviant Behavior, 29*(5), 440-460.
- Hinduja, S. (2003). Trends and patterns among online software pirates. *Ethics and Information Technology, 5*(1), 49-61.
- Hirschi, T. (1969). *Causes of Delinquency*. Berkeley, CA: University of California Press.
- Hollinger, R. C. (1993). Crime by computer: Correlates of software piracy and unauthorized account access. *Security Journal, 4*(1), 2-12.
- Holt, T. J., Bossler, A. M., & May, D. C. (2012). Low self-control, deviant peer associations, and juvenile cyberdeviance. *American Journal of Criminal Justice, 37*(3), 378-395.
- Holtfreter, K. (2015). General theory, gender-specific theory, and white-collar crime. *Journal of Financial Crime, 22*(4), 422-431.
- Keane, C., Maxim, P. S., & Teevan, J. J. (1993). Drinking and driving, self-control, and gender: Testing a general theory of crime. *Journal of Research in Crime and Delinquency, 30*(1), 30-46.
- Korea Internet and Security Agency. (2012). *2012 survey on the internet use*. Seoul: Korea Internet and Security Agency.
- Kornhauser, R. R. (1978). *Social sources of delinquency: An appraisal of analytic models*. Chicago, IL: University of Chicago Press.
- LaGrange, T. C., & Silverman, R. A. (1999). Low self-control and opportunity: Testing the general theory of crime as an explanation for gender differences in delinquency. *Criminology, 37*(1), 41-72.
- Lauritsen, J. L., Heimer, K., & Lynch, J. P. (2009). Trends in the gender gap in violent offending: New evidence from the National Crime Victimization Survey. *Criminology, 47*(2), 361-399.
- Lee, C.-H., Moak, S., & Walker, J. T. (2016). Effects of self-control, social control, and social learning on sexting behavior among South Korean youths. *Youth & Society, 48*(2), 242-264.
- Lee, C., Kim, K., & Chang, S. (2013). *A study on policy measures to protect youths with the spread of smartphone*. Seoul, Korea: Korea Institute for Youth Development.
- Meltzer, H., Vostanis, P., Ford, T., Bebbington, P., & Dennis, M. S. (2011). Victims of bullying in childhood and suicide attempts in adulthood. *European Psychiatry, 26*(8), 498-503.
- Moon, B., McCluskey, J. D., & McCluskey, C. P. (2010). A general theory of crime and computer crime: An empirical test. *Journal of Criminal Justice, 38*(4), 767-772.
- Moon, B., McCluskey, J. D., McCluskey, C. P., & Lee, S. (2013). Gender, general theory of crime and computer crime: An empirical test. *International Journal of Offender Therapy and Comparative Criminology, 57*(4), 460-478.
- Morash, M., & Moon, B. (2007). Gender differences in the effects of strain on the delinquency of South Korean youth. *Youth & Society, 38*(3), 300-321.
- Morris, R. G., & Higgins, G. E. (2010). Criminological theory in the digital age: The case of social learning theory and digital piracy. *Journal of Criminal Justice, 38*(4), 470-480.
- Payne, A. A., & Hutzell, K. L. (2017). Old wine, new bottle? Comparing interpersonal bullying and cyberbullying victimization. *Youth and Society, 49*(8), 1149-1178.
- Shannon, L. M., Havens, J. R., Oser, C., Crosby, R., & Leukefeld, C. (2011). Examining gender differences in substance use and age of first use among rural Appalachian drug users in Kentucky. *The American Journal of Drug and Alcohol Abuse, 37*(2), 98-104.

- Simon, R. J. (1975). *Women and Crime*. Lexington, Mass: Lexington Books.
- Sims, R. R., Cheng, H. K., & Teegen, H. (1996). Toward a profile of student software pirates. *Journal of Business Ethics*, 15(8), 839-849.
- Smith, D. A., & Paternoster, R. (1987). The gender gap in theories of deviance: Issues and evidence. *Journal of research in crime and delinquency*, 24(2), 140-172.
- Steffensmeier, D. J., Schwartz, J., & Roche, M. (2013). Gender and twenty-first-century corporate crime: Female involvement and the gender gap in Enron-era corporate frauds. *American Sociological Review*, 78(3), 448-476.
- Stuart, J., & Jose, P. (2014). Is bullying bad for your health? The consequences of bullying perpetration and victimization in childhood on health behaviors in adulthood. *Journal of Aggression, Conflict and Peace Research*, 6(3), 185-195.
- Tittle, C. R., Ward, D. A., & Grasmick, H. G. (2003). Gender, age, and crime/deviance: A challenge to self-control theory. *Journal of research in crime and delinquency*, 40(4), 426-453.
- Van Geel, M., Vedder, P., & Tanilon, J. (2014). Relationship between peer victimization, cyberbullying, and suicide in children and adolescents: a meta-analysis. *JAMA pediatrics*, 168(5), 435-442.
- Vazsonyi, A. T., & Belliston, L. M. (2007). The family→ low self-control→ deviance: A cross-cultural and cross-national test of self-control theory. *Criminal Justice and Behavior*, 34(4), 505-530.
- Yang, S.-J., Stewart, R., Kim, J.-M., Kim, S.-W., Shin, I.-S., Dewey, M. E., . . . Yoon, J.-S. (2013). Differences in predictors of traditional and cyber-bullying: a 2-year longitudinal study in Korean school children. *European Child and Adolescent Psychiatry*, 22(5), 309-318.
- Ybarra, M. L., & Mitchell, K. J. (2004). Online aggressor/targets, aggressors, and targets: A comparison of associated youth characteristics. *Journal of child Psychology and Psychiatry*, 45(7), 1308-1316.
- Yun, I., & Kim, S.-G. (2016). Bullying among South Korean adolescents: Prevalence and association with psychological adjustment. *Violence and Victims*, 31(1), 167-184.
- Yun, I., Kim, S.-G., & Kwon, S. (2016). Low self-control among South Korean adolescents: A test of Gottfredson and Hirschi's generality hypothesis. *International Journal of Offender Therapy and Comparative Criminology*, 60(10), 1185-1208.