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The Predictive Ability of Self-Control and Differential Association on Sports Fans' Decision to Engage in Cyber Bullying Perpetration against Rivals

Seyyed Masoomeh (Shamila) Shadmanfaat¹
University of Guilan, Iran

C. Jordan Howell²
University of South Florida,
United States of America

Caitlyn N. Muniz³
University of Texas at El Paso,
United States of America

John K. Cochran⁴
University of South Florida,
United States of America

Saeed Kabiri⁵
University of Mazandaran, Iran

Dustin A. Richardson⁶
University of South Florida,
United States of America

Abstract

A sample of 318 students from two Iranian universities was employed to conduct a test of Gottfredson and Hirschi's self-control theory and elements of Akers' social learning theory. Specifically, we sought to determine whether these theories are capable of explaining the decision to cyber bully members and fans of rival sports teams. Structural equation modeling was used to analyze these data. Findings suggest that individuals with low levels of self-control are more likely to engage in cyber bullying perpetration. Similarly, those who associate with delinquent peers are more likely to engage in cyber bullying perpetration. Additionally, we found that ineffective parenting has an indirect effect on cyber bullying perpetration through its direct effect on self-control and differential association. Lastly, we found that self-control and differential association interact to more fully explain cyber bullying perpetration. Theoretical implications are discussed.

Keywords: Cyber bullying, Self-Control, Differential Association, Criminological Theory.

¹ Master's Graduate of Sociology, University of Guilan, Rasht, Guilan Province, Iran.

² Graduate Student, Department of Criminology, University of South Florida, 4202 E. Fowler Ave., SOC 107, Tampa, FL 33620-8100, USA. Email: cjhowell@mail.usf.edu

³ Assistant Professor, Department of Criminal Justice at the University of Texas at El Paso, Education Building (EDU), Suite 111, 2300 Randolph Drive, El Paso, Texas 79968, USA.

⁴ Professor, Department of Criminology, University of South Florida, 4202 E. Fowler Ave., SOC 107, Tampa, FL 33620-8100, USA. Email: cochran@usf.edu

⁵ Department of Social Sciences, University of Mazandaran, Babolsar, Iran. Email: s.kabiri89@gmail.com

⁶ Department of Criminology, University of South Florida, 4202 E. Fowler Avenue, SOC 340, Tampa, FL 33620, USA. Email: dar3@mail.usf.edu

Introduction

Cyber bullying, Self-Control, Differential Association, Criminological Theory For many, sports are a part of everyday life and provide a great deal of entertainment, whether that consists of small talk at work or a gathering with friends to watch a sporting event. Supporting the same team can draw fans together, whereas supporting rival teams can create division. This is especially true in Iran, where it is commonplace for sports fans to support Iranian athletes while openly harassing athletes, coaches, and fans of rival sports teams, hereafter referred to as rivals (ISNA, 2013). Recent scholarship has shown competitiveness to be culturally normative in Iran. Iranian athletes who lack self-control often use performance-enhancing drugs to gain an unfair advantage (Kabiri, Cochran, Severson, Shadmanfaat, Rahmati, & Sharepour, 2018). If athletes do not perform as expected, fans turn violent (Shadmanfaat, Cochran, Muniz, & Kabiri, 2018). The known competitiveness surrounding sports fandom in Iran makes it ideal for studying cyber bullying perpetration against rivals.

As the Internet, and cyber bullying by extension, become increasingly prevalent throughout society, it is unsurprising to see an increase in attention paid by criminologists. Within the literature, cyber bullying is typically defined as intentional and repeated aggression facilitated in an electronic context against individuals who are unable to defend themselves (Kowalski, Limber, & Agatston, 2012; Patchin & Hinduja, 2012). Though cyber bullying occurs in cyber space, victimization has consequences in the physical world. Studies have found that nearly three-quarters of youth in school experience some form of cyber bullying every year (Juvonen & Gross, 2008; Katzer, Fetchenhauer, & Belschak, 2009), and cyber bullying victimization is associated with a host of antisocial behaviors, including suicide (Beran & Li, 2005; Mitchell, Ybarra, & Finkelhor, 2007; Privitera & Campbell, 2009; Ybarra, Diener-West, & Leaf, 2007).

Cyber bullying is not limited geographically, but instead is commonplace throughout the developed world (Smith, 2012). Although the literature lacks extensive cross-cultural examination, individuals residing in Australia and many European countries are less aggressive than those living in the United States, suggesting that similar differences may exist in a cross-cultural comparison of the frequency of cyber bullying perpetration (Bergeron & Schneider, 2005). More specifically, both cyber bullying perpetration and victimization are more common among Iranian youth than youth in Finland (Jaghoory, Björkqvist, & Österman, 2015). Conjointly, these findings warrant the examination of cyber bullying in various cultural climates. Considering the majority of theory testing is conducted within the United States, it is important to conduct such tests in other countries to determine if theories of deviance possess predictive ability across various cultures.

In attempt to expand the scope of criminological theory and gain a fuller understanding of why Iranian sports fans engage in cyber bullying perpetration against rivals, Shadmanfaat and colleagues (2019) applied social learning theory. Although a step in the right direction, the study suffers from a considerable flaw: it does not consider other theoretically relevant variables. The current study aims to bridge this gap in the literature by exploring the interaction between self-control and differential association and its effect on Iranian sports fans' decision to engage in cyber bullying perpetration against rivals.

Theoretical Framework

Two of the most prominent and empirically-supported theories in criminology are Gottfredson and Hirschi's (1990) self-control theory and Akers' (1998) social learning theory. Both have generated a large body of research; however, there remains much work to be done to truly understand how self-control affects the social learning process in regard to one's decision to

engage in cyber bullying perpetration. There is a dearth of cyber bullying literature regarding this issue, but researchers have made great strides in understanding the process in both the physical world and in cyberspace.

Self-Control Theory

Gottfredson and Hirschi (1990) proposed that self-control accounts for differences in the extent to which people are vulnerable to temptations. In other words, low self-control, in the presence of crime opportunity, is argued to be the sole contributor of criminal and analogous behaviors. Gottfredson and Hirschi (1990) argued that self-control is developed early in life (by ages 8-10) and is stable throughout the life-course. In accordance with this theory, the factor most significantly contributing to low self-control is ineffective parenting. In order to teach a child self-control, three elements are necessary: the parent(s) must monitor, recognize, and punish deviant behavior (Gottfredson & Hirschi, 1990).

Moreover, Gottfredson and Hirschi (1990) argued that parents who possess low self-control are less equipped to socialize their children. Additionally, parental criminality, family size, having a single-parent family, and having a mother who works outside of the home hinder the socialization process. When the socialization process is impeded, and the child is unable to develop self-control, they become impulsive, insensitive, physical, risk-taking, short-sighted, and non-verbal (Gottfredson & Hirschi, 1990). Buker (2011) examined existing literature ($n=44$) to determine how self-control is developed. He found Gottfredson and Hirschi's (1990) explanation to be lacking in complexity, and argued that other important factors exist. Other studies, such as the one conducted by Hope and colleagues (2012), found support for Gottfredson and Hirschi's (1990) assertion that ineffective parenting impedes the development of self-control. More recently, low self-control, stemming from ineffective parenting, has been found to increase a child's involvement in online deviance (Baek, 2018).

While low self-control is a significant risk factor for personal problems, higher levels of self-control have been found to decrease the risk of personal and interpersonal problems (Tangney, Baumeister, & Boone, 2004). More specifically, high levels of self-control are correlated with a higher grade point average, fewer reports of psychopathology, higher self-esteem, less alcohol abuse, less binge eating, better interpersonal and relationship skills, secure attachment (Tangney, Baumeister, & Boone, 2004), and decreased likelihood of bullying perpetration (Chui & Chan, 2012).

Self-control has also proven to have relevance in cyberspace. Low self-control is correlated with producing child pornography (Clevenger, Navarro, & Jasinski, 2014), cyber loafing while at work (Restubog, Garcia, Toledano, Amarnani, Tolentino, & Tang, 2011), and cyber bullying (Vazsonyi, Machackova, Sevcikova, Smahel, & Cerna, 2012). Interestingly, cyber bullying patterns resemble traditional bullying patterns, for both perpetration and victimization, from a random sample of youth from 25 European countries (Vazsonyi et al., 2012). In addition, self-control, or the lack thereof, is consistently and significantly associated with bullying, both cyber and traditional (Vazsonyi et al., 2012).

While there has been substantial support for the idea that self-control is responsible for deviance, Pratt and Cullen (2000) found that self-control and variables from social learning theory are "strong predictors of crime, and that controlling for one set of variables is unlikely to eliminate the effects of the other" (p. 948). Since Pratt and Cullen's (2000) study, a growing body of literature has supported this claim (Burruss, Bossler, & Holt, 2012; Holt, Bossler, & May, 2012), which runs counter to the argument that low self-control is the sole cause of crime.

Social Learning Theory

There are four concepts central to Akers' (1998) social learning theory: differential association, differential reinforcement, definitions, and imitation. Differential association is an individual's interactions with others. When an individual associates with criminals, they are exposed to antisocial norms, values, and attitudes, which increase the likelihood that they will commit crime. The entire learning process operates through differential association. Second to prior deviant behavior, differentially associating with deviant peers is the best predictor of crime and delinquency (Akers & Jensen, 2006). Differential reinforcement consists of the punishments and rewards that an individual receives from their social circles for committing various acts, whether criminal or non-criminal. It is argued that an individual who is rewarded for antisocial behavior is more likely to engage in such behavior. Definitions are one's own beliefs and attitudes, which are shaped by both differential association and differential reinforcement. Possessing an excess of definitions favorable to crime increases the likelihood of offending. Imitation occurs when an individual mimics a learned behavior, but is more important for the onset of a behavior rather than the longevity. Stated more precisely, one cannot commit crime if one never learns how to do so.

Social learning theory is one of the most empirically-supported theories in criminology. It has been used to explain a wide array of behaviors including, but not limited to, alcohol use among the elderly (Akers, La Greca, Cochran, & Sellers, 1989), repetitive intimate partner violence (Cochran, Sellers, Wiesbrock, & Wilson, 2011), smoking (Kobus, 2003), and gender differences in drug use (Svensson, 2003). Additionally, social learning theory has proven to have relevance in cyberspace. It has been used as an explanation for music piracy (Hinduja & Ingram, 2009), some forms of computer hacking (Morris & Blackburn, 2009), and cyber bullying perpetration (Low & Espelage, 2013; Shadmanfaat, Howell, Muniz, Cochran, Kabiri, & Fontaine, 2019).

The Full Model

As mentioned above, Gottfredson and Hirschi (1990) stated that low self-control (in the presence of crime opportunity) is the sole cause of crime. Additionally, it has been established that variables from social learning theory remain significant when put into the same model as self-control (Pratt & Cullen, 2000). Since Pratt and Cullen's (2000) study, researchers have made advancements in the literature by examining the full effect of variables from social learning theory and self-control in both the physical world and cyberspace.

In the physical world, research has established that neither social learning theory nor self-control theory are singularly correct (e.g., McGloin & Shermer, 2009; Meldrum, Young, & Weerman, 2009). Rather, both low self-control and deviant peers are criminogenic risk factors. Moreover, deviant peer structure may promote deviant behavior wherein individuals who were "central members" of a deviant group are more likely to offend in the future. Self-control influences network structure in that those with low levels of self-control are more active within a deviant group (McGloin & Shermer, 2009).

When examining both direct and indirect measures of peer delinquency, self-control and associating with delinquent peers are correlated with delinquency (Meldrum, Young, & Weerman, 2009). More interestingly, self-control has a greater effect on delinquency when a direct measure of peer delinquency is considered (Meldrum, Young, & Weerman, 2009). Moreover, there is an interaction effect in that the effect of self-control decreases as peer delinquency decreases. Overall, these findings indicate that peer delinquency has an effect on

delinquency—a finding that is in opposition to Gottfredson and Hirschi's (1990) claim that self-control is the sole cause of crime.

As cyber deviance becomes increasingly more prevalent, researchers are beginning to more fully examine its correlates, and findings in cyberspace often parallel findings in the physical world. Self-control and peer association have been found to correlate with myriad forms of cyber deviance, including piracy, harassment, online pornography, and hacking (Holt et al., 2012; Higgins & Makin, 2004; Hinduja & Ingram, 2008; Meldrum & colleagues, 2009). For example, having low levels of self-control and associating with peers who engage in software piracy increase involvement in software piracy (Higgins & Makin, 2004). More specifically, low self-control does not correlate with software piracy for those students who do not have many delinquent friends, but has a strong correlation for those students who have many delinquent friends (Higgins & Makin, 2004).

Similarly, when examining the interaction effect of social learning, self-control, and ethical beliefs on individuals' involvement in music piracy, self-control conditions the effects differential association and differential reinforcement have on music piracy (Hinduja & Ingram, 2008). In other words, there is an interaction effect between variables from social learning theory and self-control (Hinduja & Ingram, 2008; Meldrum et al., 2009). Social learning variables also mediate the effect of self-control on piracy; self-control's indirect effect on piracy is greater than its direct effect, which, in essence, means that the vast majority of self-controls' importance is its ability to explain association with delinquent friends (Burruss et al., 2012).

Regarding cyber bullying specifically, Li and colleagues (2016), using a sample of middle school students, examined the explanatory power of both self-control and social learning theory on cyber bullying. Both theories significantly predicted cyber bullying perpetration; however, the social learning process partially mediated the effect of self-control. Therefore, the authors concluded that self-control is most important in its ability to explain association with delinquent peers (Li et al., 2016).

In sum, the aforementioned studies have provided insight into how one's self-control and the social learning process interact. However, the literature is predominantly conducted using an American sample and little attention is given to the reasons individuals engage in cyber bullying perpetration against rivals (cf. Shadmanfaat et al., 2019). This lack of attention is surprising considering that cyber bullying is a worldwide phenomenon and athletes are easy targets given their high-profile status. The current study seeks to bridge these gaps in the literature by exploring the interaction between self-control and the social learning process on Iranian sports fans' decision to engage in cyber bullying perpetration against rivals. Specifically, the current study seeks to answer the following research questions:

1. Does self-control influence an individual's decision to cyber bully rivals?
2. Does differential association influence an individual's decision to cyber bully rivals?
3. Does ineffective parenting have an effect on an individual's level of self-control?
4. Does ineffective parenting influence an individual's decision to associate with delinquent peers?
5. Does ineffective parenting indirectly influence an individual's decision to cyber bully rivals through its effect on self-control and differential association?
6. Do the effects of differential association and self-control interact to more fully explain cyber bullying perpetration against rivals?

We hypothesize that participants with low self-control will be more likely to cyber bully rivals than those with higher levels of self-control. We also hypothesize that participants who associate with delinquent peers will be significantly more likely to cyber bully rivals than those who do not associate with delinquent peers. Moreover, we hypothesize that participants who experienced ineffective parenting will have lower levels of self-control and be more likely to associate with delinquent peers. In addition, we hypothesize that ineffective parenting will indirectly lead to increased cyber bullying perpetration. Lastly, we hypothesize that the effects of self-control and differential association will combine for a cumulative effect that serves as a better predictor of one's cyber bullying habits.

Methodology

To answer the proposed research questions, we surveyed a random sample of 318 students that attended either the University of Guilan or the Rasht branch of the Islamic Azad University in Rasht, Iran. To participate in the study, participants had to identify as fans of a sports club. Participants were not required to be supportive of any particular team. Of the participants, 48 percent of respondents were female, 42.2 percent were between the ages of 20 and 24, 21.5 percent were between the ages of 25 and 30, and 12.1 percent were older than 30. The survey was distributed in Persian and results were then translated to English.

Independent variables

Influenced by extant literature showing self-control theory's relevancy to cyberspace (Clevenger et al., 2016; Restubog et al., 2011; Vazsonyi et al., 2012) and to address a gap in the cyber bullying literature, we sought to test the effect that self-control has on individuals' propensity to cyber bully rivals. Measures of self-control, ineffective parenting, and differential association were employed as this study's independent variables. Self-control was measured using the Grasmick et al. (1993) scale, which includes measures of impulsivity, a preference for simple tasks, risk-seeking behavior, a preference for physical activities, self-centeredness, and temper. Responses to each of the self-control scale's items ranged from strongly agree (1) to strongly disagree (5). Additionally, a scale was used to measure the latent construct of ineffective parenting, or inept socialization, because of its hypothesized effect on self-control. This scale utilizes questions developed by Simons and colleagues (1994) and Unnever and colleagues (2006). Included are measures for parental monitoring, inconsistent discipline, harsh parenting, and unsupervised time. The ineffective parenting scale consisted of responses ranging from "never" (1) to "always" (5).

Finally, a self-report scale was used to measure differential association. The scale was influenced by Hinduja and Patchin (2010; 2013) and contains four items that inquired about participants' friends' behaviors online. Specifically, the differential association scale asked participants how many of their friends did things like post mean comments directed at, or spread rumors about, rivals online. Respondents were informed that rivals could include members, coaches, athletes, and fans of opposing teams. Responses for the differential association scale included: none of them (0); a few of them (1); some of them (2); most of them (3); and, all of them (4).

Dependent variable

To measure the dependent variable, cyber bullying perpetration against rivals, we used a scale influenced by Hinduja and Patchin's (2013) work that assessed participants' online behavior. More specifically, the cyber bullying scale allowed the researchers to collect information regarding

how frequently participants bullied rivals online. The acts of bullying measured included the spreading of rumors about, and threatening the safety of, rivals online. Responses ranged from never (0) to every day (4).

Analytic strategy

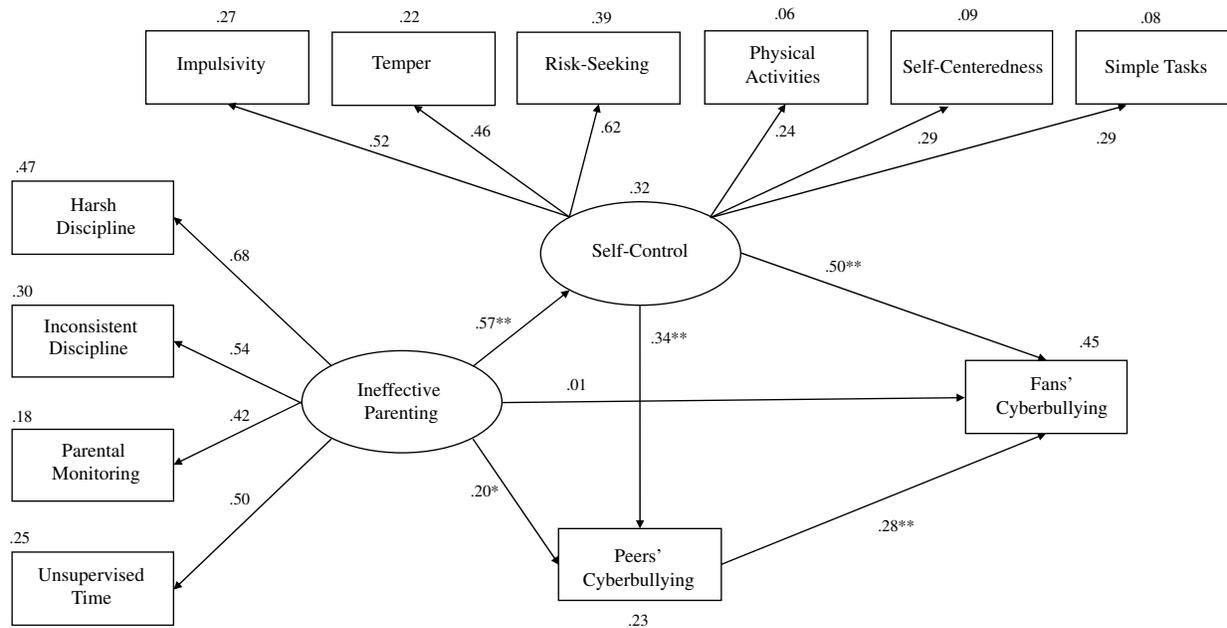
Given this study's hypotheses, structural equation modeling (SEM) was the most appropriate statistical analysis for several reasons. First, the use of the latent variables, self-control and ineffective parenting, made SEM appropriate because this technique begins by producing a confirmatory factor analysis, which allows the construct validity of the measures to be assessed by determining how well the model fits the data (Higgins, Fell, & Wilson, 2006). Descriptive statistics, including factor loadings, for the theoretical factors can be found in Table 1. Model fit statistics, located in Table 3, suggest that our model is a good fit for the data. Second, the possibility that the outcome variable from one equation becomes a predictor variable in the next equation made SEM appropriate as our study attempts to discover whether ineffective parenting mediates the effects of low self-control and delinquent peers.

Table 1. Descriptive Statistics of Theoretical Factors

	Factor Analysis	Composite Reliability	AVE	Skewness	Kurtosis
Cyber bullying against Rivals	0.84 - 0.92	0.95	0.89	1.33	0.27
Impulsive	0.67 - 0.79	0.84	0.56	1.41	1.35
Temper	0.69 - 0.77	0.81	0.52	0.71	-0.03
Risk-Seeking	0.67 - 0.76	0.81	0.52	0.50	0.74
Physical Activities	0.55 - 0.75	0.75	0.43	0.51	0.03
Self-Centeredness	0.67 - 0.74	0.80	0.49	0.85	0.33
Simple Task	0.63 - 0.81	0.82	0.53	0.75	-0.25
Peers' Cyber bullying	0.56 - 0.86	0.79	0.49	0.78	-0.22
Harsh Discipline	0.58 - 0.70	0.78	0.42	0.66	-0.39
Parental Monitoring	0.65 - 0.76	0.87	0.49	0.68	0.03
Unsupervised Time	0.61 - 0.81	0.80	0.51	0.58	-0.36
Inconsistent Discipline	-	-		0.87	-0.41

Note = Factor analysis is based on first order factor analysis

Figure 1. Theoretical model of fans' cyber bullying



Results

1. Correlation Analyses

Bivariate correlations, presented in Table 2, show an inverse relationship between cyber bullying perpetration against rivals and self-control. Stated another way, a decrease in self-control is associated with an increase in cyber bullying perpetration against rivals. Similarly, there is a significant correlation between differential association and cyber bullying perpetration against rivals — higher levels of differential association are associated with increased perpetration of cyber bullying.

Table 2. The zero-order correlations between measures (n = 318)

	M	SD	1	2	3	4
1. Cyber bullying	4.65	5.65	1.00			
2. Low Self-Control	54.76	11.94	0.45**	1.00		
3. Peers' Cyber bullying	5.31	3.71	0.51**	0.32**	1.00	
4. Ineffective Parenting	41.80	10.36	0.26**	0.29*	0.24*	1.00

Note: * $p < 0.05$, ** $p < 0.01$

2. Mediation Analyses

We hypothesized that there would be a structural relationship between our main indicators: ineffective parenting, low self-control, differential association, and fans' cyber bullying. To investigate the direct and indirect effects of these main factors on fans cyber bullying, the bootstrapping method ($n = 2000$) in AMOS was used. As the structural modeling analysis shows

(Table 3), fans' cyber bullying is significantly and directly predicted by low self-control ($b = 0.50$, $p < .001$) and peers' cyber bullying ($b = 0.28$, $p < .001$). Moreover, ineffective parenting has a direct effect on self-control ($b = 0.57$, $p < .001$) and peers' cyber bullying ($b = 0.20$, $p = 0.04$) and, from these paths, indirectly effects fans' cyber bullying behaviors ($b = 0.39$, $p < .001$). In addition, measures of self-control have a direct effect on peers' cyber bullying ($b = 0.34$, $p = .002$) and, from these paths, indirectly affects fans' cyber bullying perpetration ($b = 0.19$, $p < 0.001$).

Table 3. Results of mediated direct and indirect effects of independent measures on fans' cyber bullying ($n = 318$)

			Mediated Direct Effect		Mediated Indirect Effect	
			B	Beta	B	Beta
Fans' cyber bullying	←-	Self-Control	1.41	0.50***	0.27	0.09***
Fans' cyber bullying	←-	Peers' Cyber bullying	0.43	0.28***	-	-
Fans' cyber bullying	←-	Ineffective Parenting	0.02	0.01	1.30	0.39***
Low Self-Control	←-	Ineffective Parenting	0.67	0.57***	-	-
Peers' Cyber bullying	←-	Ineffective Parenting	0.43	0.20*	0.42	0.19***
Peers' Cyber bullying	←-	Self-Control	0.62	0.34**	-	-

CMIN= 95.158, DF= 51, P=.001, CMIN.DF= 1.885, RMR=.751, GFI= .650, AGFI= .923, IFI= .916, CFI= .914, RMSEA=.053

* $p < 0.05$, ** $p < 0.01$, $p < 0.001$

3. Interaction Analyses

Since previous researchers predicted that differential association may moderate the effect of self-control on deviant behaviors like fans' cyber bullying (Bossler & Holt, 2010; Hinduja & Ingram, 2008), interactions between differential association (peers' cyber bullying) and measures of self-control were created and then explored. Mean-centered multiplicative interaction terms were calculated for low self-control with a conditioning variable (peers' cyber bullying). We estimated three sets of regression equations in which only one group of interaction terms (Model 3) were included (Table 4). In order to assess the moderator effects, we used hierarchical multiple regression wherein Model 1 represents the effects of low self-control (centered) on fans' cyber bullying, Model 2 assesses the effect of centered conditional variables (peers' delinquency and peers' cyber bullying) on fans' cyber bullying, and Model 3 reports the effect of the interaction terms on fans' cyber bullying. Regarding differential association with deviant peers as a moderator, the inclusion of low self-control* peers' cyber bullying ($b = 0.25$) increased the predictive power of the main effect (low self-control on fans' cyber bullying) by 20% (R^2 change = 0.06, F Change = 31.04**, $p = 0.01$), from 20% to 40%. This finding suggests that fans' relationships with peers who have a history of cyber bullying perpetration increases the relationship between low self-control and cyber bullying. In other words, differential association boosts the effect of low self-control on fans' cyber bullying.

Table 4. Results for interaction analyses predicting fans' cyber bullying (n = 318)

	Fans' Cyber bullying		
	Model 1 B (b)	Model 2 B (b)	Model 3 B (b)
Constant	4.65**	4.65**	4.22**
Self-control	0.21 (0.45) **	0.15 (0.32) **	0.15 (0.33) **
Peers' Cyber bullying		0.61 (0.40) **	0.51 (0.34) **
Self-control * Peers' Cyber bullying			0.03 (0.25) **
R squared (Adjusted R squared)	0.20 (0.20)	0.35 (0.34)	0.40 (0.40)
R squared change	0.20	0.15	0.06
F Change	78.82**	69.97**	31.04**

Note: * $p \leq .05$. ** $p \leq .01$.

Discussion and Conclusion

Over the last few decades, Gottfredson and Hirschi's (1990) self-control theory and Akers' (1998) social learning theory have enjoyed a great deal of empirical support. Of concern, however, is whether these theories will continue to maintain relevance moving forward, particularly in explaining non-traditional deviance such as cyber bullying. The recent emergence of cyber bullying is quickly becoming an issue in the age of technology, and it is important that criminologists understand the behavior. The purpose of this study was to empirically test the applicability of these two theories in explaining cyber bullying to address this concern.

Among a sample of Iranian college students, we predicted that those possessing low self-control and those who associate with deviant peers are significantly more likely to cyber bully rivals than their counterparts. We also predicted that ineffective parenting would indirectly influence fans' decision to cyber bully through its direct effect on self-control and differential association. Finally, we predicted that the effects of self-control and differential association would combine to create a complementary model that is better able to predict the cyber bullying of rivals. Our results indicated support for each hypothesis.

Consistent with Gottfredson and Hirschi's (1990) theory, participants with low levels of self-control were significantly more likely to cyber bully rivals. The proliferation of mobile phones, the internet, and social media has drastically increased opportunities for cyber bullying. Those with low self-control are constantly presented with opportunities to engage in cyber bullying. The combination of low self-control and increased opportunities is a recipe for cyber bullying perpetration. Moreover, low self-control was related to having peers who engage in cyber bullying behaviors. This aligns with the idea that birds of a feather flock together (Gottfredson & Hirshi, 1990).

Relatedly, differential association resulted in an increase in cyber bullying. More specifically, those who associated with individuals who had a history of cyber bullying were more likely to cyber bully rivals themselves. Given the empirical research supporting the notion that peers' delinquency increases negative behaviors (Akers & Jensen, 2006), this finding is unsurprising; however, this finding does expand the explanatory value and generalizability of the theory as this is a very specific type of cyber bullying among a culturally unique sample.

Third, ineffective parenting had a direct effect on both self-control and differential association, and an indirect effect on fans' tendency to be involved in cyber bullying perpetration. This finding was especially interesting given the way in which ineffective parenting was measured. Gottfredson and Hirschi (1990) speculated that ineffective parenting in early childhood would lead to low self-control; yet, this study measured college-aged respondents' perceptions of ineffective parenting and found support. While we did not ask respondents about how they perceived their parent's parenting techniques in early childhood, we speculate that there would not be a substantial change in parenting from early childhood to late adolescence/early adulthood. In this vein, we speculate that the ineffective parenting strategies experienced by respondents mirror those occurring during early childhood that resulted in the individual's lifetime self-control. Future research should attempt to disentangle respondent's early childhood perceptions of parenting, or, perhaps more accurately, use prospective research designs to examine parenting during childhood and later cyber bullying perpetration.

Finally, we found that self-control and differential association interact to more fully explain fans' decision to engage in cyber bullying. This interactive effect lends support to the argument that researchers should consider both self-control and differential association as important predictors of delinquency. Pratt and Cullen (2000) found that self-control and variables from social learning theory are "strong predictors of crime, and that controlling for one set of variables is unlikely to eliminate the effects of the other" (p. 948). The current study found that controlling for one variable does not eliminate the effect of the other, but instead they interact to more fully explain cyber bullying perpetration against sports rivals. Future studies should replicate the analyses presented to see if the findings hold when examining other forms of deviance in both cyberspace and the physical world.

Overall, this study has several theoretical implications. Most notably, the results of this study indicate further support for self-control and differential association as correlates of deviance. Many tests of these theories have found empirical support when examining crimes such as drug use (Kabiri, 2018; Svensson, 2003), drinking (Akers et al., 1989), or violence (Cochran et al., 2011). Yet, fewer studies have applied the theories to other forms of deviance. This study finds support using a rather unique sample for a specific type of deviance: cyber bullying against rivals. These findings, therefore, increase the generalizability and applicability of these theoretical components. Secondly, ineffective parenting was found to be a rather salient influence on both self-control and differential association. This finding suggests that parenting abilities and techniques are extremely important in both processes, with the results of ineffective parenting having deleterious effects on a child's behavior later in life. Furthermore, given that this study evaluated adults' perceptions of parenting and found significant results, perhaps the ramifications of ineffective parenting are not isolated to what is experienced during early childhood. More research is needed to further examine the effects of parenting strategies over the life course.

As with any study, this study has limitations. Most notably, the study only includes one component of Akers (1998) social learning theory: differential association. Although the social learning process operates through differential association, future studies should attempt to include all four components. In addition, employing a sample of college students harms the generalizability of the study's results; however, we do believe that utilizing an Iranian sample is a strength of the study. Empirical tests of criminological theories can benefit from an international perspective. Another limitation of the study stems from the nature of self-report data, which could open the results up to the effects of social desirability. Moreover, it may have been difficult for participants to accurately assess their behavior online over a year's time, which may skew the

results. Additionally, the use of Likert scales may not appropriately measure our dependent and independent variables. Future research should utilize different methods of measurement in an effort to better study cyber bullying as a multifaceted phenomenon.

In summary, Gottfredson and Hirschi's (1990) self-control theory and differential association (Akers, 1998) both predict fans' decision to cyber bully rivals. Although both self-control and differential association have predictive power, we argue for a complementary model. Future studies should examine whether this complementary model continues to have empirical support in other realms of cyberspace as well as the physical world. Testing the predictive ability of criminological theories in cyberspace enhances our knowledge of new forms of deviance, and simultaneously expands the scope of the theories in ways that were unimaginable at the time of their inception.

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