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Cyberdeviance among Adolescents: Analyzing the Online–Offline Overlap and Predictors of Deviant Behavior

by

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ABSTRACT

Advances in technology and the ever increasing ubiquity of the Internet have given rise to cyberdeviance. The purpose of this study was to find predictors of cyberdeviance, as well as the characteristics of adolescents who engage in it. Chapter One introduced the concept of deviance and examined the history and trends in its usage in scholarly research. The review showed that traditional theories of deviance are not as well equipped to predict cyberdeviance when compared to offline deviance. Chapter Two looked at the prevalence of deviant behavior and analyzed correlations among various scales measuring online and offline deviance. Results showed that deviance rates among adolescents vary greatly, and there is a considerable overlap between online and offline deviance. Chapter Three compared cyberdeviance (downloading and hacking) rates across 30 countries. Cyberdeviance was relatively uniform among the various regions of the world, and most of the variance was explained within countries themselves. Regression analysis revealed that individual attitudes and social factors, such as family, school, and neighborhood, are all associated with cyberdeviance, although their explanatory power was relatively low. Chapter Four developed two new scales: the Online Disinhibition Scale and the Revised Online Disinhibition Scale. These scales were used to address the unique nature of cyberspace and its disinhibiting effects on users. The former scale was applied to cyberbullying and it proved to be a significant predictor, explaining more variance than the regressions models in Chapter Three. The newly developed Revised Online Disinhibition Scale was tested in Chapter Five. It combined a number of competing theories, and utilized structural equation modelling to analyze online and offline deviance. Incorporating gender and a social desirability measure in the final model, the results yielded strong evidence in favor of individual traits over social factors as the primary predictors of cyberdeviance, explaining 44% of the variance in the

dependent variable. As hypothesized, toxic online disinhibition was a significant predictor of cyberdeviance, but it had no effect on offline deviance. Greater acceptance of violence was positively associated with both online and offline deviance, while increased parental attachment had negative associations in both cases. Neighborhood and peer attachment were significant predictors of offline deviance, and, contrary to expectations, it was a positive association for peer attachment. In conclusion, a combination of traditional theories of deviance and online disinhibition measures is recommended for future study of cyberdeviance.

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PREFACE

Our daily lives are increasingly intertwined with technology, moving many of the activities that were conducted by actually meeting people face-to-face or visiting the local store into cyberspace. As this trend continues, new practices of cyberdeviance, such as flaming, trolling, cyberbullying, hacking, digital piracy, and online pornography among others, have entered the lexicon and crop up ever more frequently. Among these, being a victim of cyberbullying has been associated with suicidal ideation and suicide attempts (Hinduja and Patchin 2010), and in rare cases resulting in a tragic loss of life (Irish Examiner 2012). Research has shown that more and more youth violence, including gang activities, is manifesting itself online (Patton, Hong, Ranney et al. 2014). Hacking poses a very large security threat for individuals, companies and governments alike, and crimes committed through hacking are proliferating (Nelson 2014). The consensus seems to be that these issues will only get more serious, as the use of technology rises.

The line between reality and the virtual world is becoming increasingly blurred with each passing day. Online and offline deviance are characterized by similar ambiguity, with definitions and acceptable norms changing and evolving continuously. This dissertation is an attempt to shed light on cyberdeviance through the prism of sociology of deviance. The focus will be on acts of deviance (e.g., cheating on a test), not conditions of deviance (e.g., disability), applying the explanatory approach rooted in positivism.

This dissertation covers the study of deviant behavior in sociology, at the same time integrating theoretical frameworks from other disciplines, such as criminology and psychology. Throughout the dissertation the following two main questions will be explored: do online and offline deviant behaviors overlap, and what are the strongest predictors of such behaviors?

Chapter One will look at the history of sociology of deviance, starting with Emile Durkheim and Chicago School of Sociology. From there on, the chapter will retrace the development and changes of the various approaches that address deviant behavior. How is deviant behavior defined? How does one study and measure deviance? What theories have been developed and applied in the study of deviance? How has technological development influenced deviance?

Acknowledging the rise of cyberspace, Chapter Two will investigate the overlap of online and offline deviance. Furthermore, the gender differences and trends of deviant behavior among adolescents will be explored. Do males and females engage in deviant behavior similarly? Are there any age differences? Should we examine online and offline deviance separately, or is there an overlap between the two dimensions?

Chapter Three will test the main traditional theories of deviance in relation to cyberdeviance. The Internet has changed the landscape of deviant behavior, but most of the traditional theories of deviance were created before this shift. Are they applicable to the study of cyberdeviance, or should we be looking for new theoretical frameworks and measures? Which theories provide the best explanation? Are there any differences between countries?

Chapter Four will address the lack of measures specifically designed to predict cyberdeviance. Divided into two parts, this chapter will develop two instruments that can be applied for the prediction cyberdeviance. Does the cyberspace disinhibit its users? If there is such an influence, how is one's behavior affected? Can we measure the attitudinal differences in "benign" and "toxic" online disinhibition?

Chapter Five will attempt a combined approach to study online and offline deviance, employing measures from traditional theories of deviance and the newly developed scales from previous chapter. Based on the findings from all the previous chapters, Chapter Five

will compare a number of theories in order to find out the most useful measures for studying deviant behavior. Which theories and predictors provide the best explanatory power for online and offline deviant behavior? Can these theories predict both online and offline deviance or they apply only to one of the two dimensions?

Chapter Six will sum up all the findings from previous chapters and discuss the possible approaches to study deviant behavior. The implications and limitations of this dissertation will be discussed. Should online and offline deviance be studied separately or together? How does online disinhibition influence cyberdeviance?

CHAPTER ONE – DEVIANT BEHAVIOR BEFORE AND NOW – FROM OFFLINE TO ONLINE

1.1 The Emergence of the Concept of Deviance, Its Definitions, and Critique

Sociology has a long tradition at examining the ills and problems of societies. The field's seminal work was Emile Durkheim's "Suicide" which was a groundbreaking study in sociology that established a standard on what a monograph in sociology should look like. Durkheim used publicly available data to compare suicide rates across countries and explain the differences (Durkheim [1897] 2005). One of the conclusions that Durkheim drew from his seminal study was that religion plays a role: "Because the Catholic religion imposes on its faithful a vast system of dogmas and practices, and so penetrates all the details of even their earthly life, it attaches them to this life with greater force than Protestantism" (Durkheim [1897] 2005:342). Although he didn't specifically refer to deviance, Durkheim talked about crime and argued for its necessity and normalness in a society. In Durkheim's view crime was just a deviation from the established norms (Durkheim [1897] 2005). As Horsley (2014:87) succinctly summarizes Durkheim's argument: "The growing complexity of social relations seemed to isolate individuals from the normative values that structured interaction heralding a condition of normlessness . . . resulting in growing deviation from established norms amongst the worst affected by the rapid pace of social change in industrialized societies." Furthermore, Durkheim established the "social fact" as a tool for sociologists to do research and started a positivist tradition in the field (Durkheim [1895] 1982). Since Durkheim's time sociologists expanded the discussion concerning what is deviant, normative or acceptable behavior, with a number of new theories being proposed.

Inspired by Durkheim's view of social facts or social reality, the Chicago School of Sociology set out to investigate deviance further. The focus had shifted from the individual to

the social context. Their first conclusions were that most of the crime, degeneracy, and other social problems are mostly concentrated in the poorest or most run-down areas of the city. Those areas were characterized as "disorganized," which led to the foundation of social disorganization theory (Horsley 2014:87-88). As Pfohl (1985:135-36) noted, during the tumult of rapid change, reorganization of the society was seen as a natural step in advancement into the future. This change was the source of conflict, large migrations, exponentially growing metropolitan areas, and consequently social disorganization which completely or partially freed people from the norms they had adhered to.

Frederic Thrasher's seminal study of 1,313 gangs in Chicago paved the way for future control theorists and gang researchers (Kornhauser 1978, Thrasher and Short 1963). Thrasher argued that gangs form because of the vacuum of social organization to establish order. Social disorganization leads to problems attaining basic human needs, which in turn becomes the primary goal for gang formation, not delinquency. Kornhauser (1978) described Thrasher's theory as a pure control theory because no strain or subculture variable was needed besides weak controls for the cause of delinquency. Joining a gang would just reinforce one's preexisting propensity for delinquency, but the real cause is in the variation of social controls upon the individual, the most important factor being family (Kornhauser 1978:51-57). The two sources of community disorganization are rapid economic development in the new industrial cities and large migration of different peoples. Taking into account the two factors, Thrasher and Short (1963:337-38) made the argument that cities struggled with implementing proper social controls in the fast changing environment, which led to increased social disorganization and consequently delinquency.

Departing from the Chicago School, Robert Merton proposed a different functionalist theory for explaining deviance and crime, introducing the concept of strain (Merton 1938). He argued that the core values of attaining material wealth in the American society are blamed

for creating a ‘strain’ on the individual. Stigmatizing manual labor and restricting everyone’s opportunities to attain prosperity are bound to tempt some to turn to illegitimate means (Merton 1938).

Building on Merton’s theory, Albert Cohen introduced the concept of subculture in an attempt to understand deviant behavior. To explain why and how some people handle the strain conforming to the societal norms, Cohen argued for the importance of the group or the subculture. Essentially there is no difference between the delinquent and the non-delinquent: both categories have the cleverer, slower thinking or any other kind of characteristics. It is thus the extent of exposure to delinquent subculture that makes the big difference. Some subcultures have explicit goals of indoctrinating their new members to lawbreaking, strengthening one’s non-conformity and deviance (Cohen 1956). Cohen (1956:14) argued that: “The process of becoming a delinquent is the same as the process of becoming, let us say, a Boy Scout. The difference lies only in the cultural pattern with which the child associates.”

It was around World War II that the usage of the term “deviance” among sociologists became widespread (Best 2004:17). However, not long after its initial rise in popularity, the term came under a lot of criticism (Akers 1968, Erikson 1962, Kitsuse 1962, Liazos 1972). The foremost critique came from interactionists, of whom the most notable one was Howard Becker. He argued that deviance is not a fixed construct, but rather an outcome or a label that is put on an individual (Becker 1963). Thus, whether someone is deviant or not, did not necessarily depend on the actual person, but on how others might perceive them. For example, the marijuana smokers in Becker’s study did not view themselves as deviant, but the society at large or certain groups labelled them as deviant. Among other prominent critics was Erving Goffman who introduced the concept of stigma and “normal deviant.” For example, he noted that racial minorities are stigmatized, but should we call them deviant (Goffman 1963)? Here

again we can see that, just as Becker's marijuana smokers were labelled deviant, racial minorities were stigmatized just for what they are, thus the "normal deviant" concept.

To exacerbate the situation, sociology of deviance was losing ground to the emerging field of criminology, as well as being critiqued by feminism, conflict theory, and identity politics (Best 2014, Dotter 2014). First, conflict theorists criticized the pervading theories of deviance, as well as the emerging labeling theory, for not taking into account the power structures in the society. Labeling theory as well did not address white-collar crime, corruption, and the influence of politics and economics. An important question raised by some of the critics was: who decides if something is deviant or not (Gouldner 1968, Liazos 1972)? Second, critique also came from feminists, claiming that unrefined labeling theory completely ignores women, their victimization, and other groups who are in a weaker position to begin with (Schur 1965). Third, a number of other emerging social movements were politicizing "deviance." Among them notably gays, lesbians, and the disabled started to campaign for their rights to counter the negative deviant label, that had been attached to their groups long since (Humphreys 1972).

Since the 1960s and 1970s "deviance" had lost some of its popularity and defining it in a way that most would agree upon had become virtually impossible. Rock (1985:182; italics in the original) described the plight of sociologists as follows:

> It is not even evident that people do talk about deviance with any great frequency. Instead they allude to specific forms of conduct without appearing to claim that there is any single, over-arching category that embraces them all. They may talk of punks, addicts, glue-sniffers, extremists, thieves, traitors, liars and eccentrics, but they rarely mention *deviants*. It may only be the

> sociologist who finds it interesting and instructive to clump these groups together under a solitary title.

Although the use of the term "deviance" was in decline, research about such behaviors as mental illness, abuse, homosexuality, disability, and suicide continued to expand and grow in size. As the number of articles concerning these topics increased, the frequency of the usage of "deviance" declined (Best 2004:25).

The definitional issues that had been dogging deviance almost since its inception culminated during the 1990s. The increasing difficulty of defining deviance, or a "definitional creep" as Best (2014) would describe it, was taking its toll on the credibility and liveliness of the field. The highest point of criticism was reached in the first half of the decade with the publication of Colin Summer's "*The Sociology of Deviance: An Obituary*," where he argued for the demise of sociology of deviance (Summer 1994). Some have tried to empirically measure this claim (Miller, Wright and Dannels 2001), but not without limitations. Goode (2014:16) accuses Summer, contending that: "He is guilty of a bait-and-switch scam in which metaphor and rhetoric substitute for data and analysis." Goode argues that Summer could not answer the question, because he himself had stated in incorrectly. For Summer the purpose of the field had changed marking this "death," but Goode asserted, it is not the "death" of the sociology of deviance itself (Goode 2014). To sum up the main arguments and issues concerning sociology of deviance in the 20th century Best (2004:26) noted:

> Mainstream sociology has preferred to pretend that some sort of objectivist stance is possible, that social problems are social conditions that share some qualities, or that all deviance involves rulebreaking. Subjectivist critics have found it easy to challenge the mainstream's arguments; instead, they argue,

social problems and deviance must be understood as subjective categories—as, respectively, social constructions or labels.

The 21st century has breathed a new life in the theoretical discussion of deviance. The statistical definition of deviance, i.e., emphasizing something that occurs very rarely has almost completely gone out of fashion. The same can be said about reactivist or labeling view of Becker (1963) and the absolutist definitions that could be rooted in religion and do not take into account the realities of daily life and situations (Clinard and Meier 2011).

The dominant definition in the field refers to norms, but in a more nuanced way than it was established in mid-20th century: "Deviance constitutes departures from norms that draw social disapproval such that the variations elicit, or are likely to elicit if detected, negative sanctions." (Clinard and Meier 2011:7) Furthermore, deviance does not necessarily mean just certain behavior or actions. Adler and Adler (2000:8) take the discussion away from behavior and note the variety of phenomena that might infer deviance: "People can be labeled deviant as the result of the ABCs of deviance: their attitudes, behaviors, or conditions." Deviance is a matter of degree, and it depends on the audience. The more universal the agreement of a certain action being deviant, the higher the chance that a deviant act will be criticized or punished.

Best (2004:26) noted how mainstream sociology has been criticized for blind positivism, but most scholars have moved beyond the positivist – constructionist dichotomy. All scholars who apply the positivist approach in their research understand that deviance is socially constructed. Furthermore, those advocating this approach, focus specifically on acts of deviance (Goode 2015), not conditions such as Adler and Adler discuss in their work. By abandoning concrete definitions and quantitative measures, as Hall (2012:54) argues, we would "simply end up with a will-o'-the-wisp, a swirling mist of sense impressions and

linguistic categories, a realm of impenetrable Kantian noumena to which we have no true access even with our most sophisticated systems of research techniques and symbols." This excess of constructionism and postmodernism in sociology has reinvigorated the discussion about grouping various deviant behaviors and using quantitative methods in empirical studies. In consequence and partly because of this excess, researchers have again started to look for a universal notion to describe deviance using the concept of harm (Costello 2006, Hall 2012:11). Thus, harm, either directed towards someone else (e.g., stealing) or received (e.g., discrimination due to a disability), can be used as the combining element for various deviant behaviors. While the application of harm might be problematic for describing all possible cases of deviance, deviant behavior or deviant acts are much easier to categorize. Research has shown that scales measuring deviant behavior show sufficient statistical reliability (Bennett and Robinson 2000, Cretacci, Rivera and Ding 2009, Fukushima, Sharp and Kobayashi 2009, Fukushima Tedor 2014, Moffitt 1989, Rogers, Smoak and Liu 2006a, Vazsonyi, Pickering, Junger et al. 2001, Vazsonyi and Pickering 2003, Vazsonyi, Clifford Wittekind, Belliston et al. 2004), indicating that there is a commonality or a combining dimension among the various behaviors.

Further advance into theoretical discussions about the characteristics of deviance has led to categorizing the concept. Spearheading this advance, Heckert and Heckert (2002) argue for the division of deviance into four categories: negative deviance, rate-busting, deviance admiration and positive deviance. The first two terms have negative evaluations, while the latter are positive. Negative deviance and deviance admiration are categorized as part of nonconformity, while rate-busting and positive deviance are described by overconformity (Heckert and Heckert 2002).

First, for negative deviance Heckert and Heckert adapt a previously developed definition of deviance by Tittle and Paternoster (2000), defining it as follows: "Negative deviance is any

type of behavior or condition that the majority of a given group regards as unacceptable *and* that evokes a collective response of a negative type or would evoke a collective, negative response if detected." (Heckert and Heckert 2002:459; italics in original) Heckert and Heckert (2002:460) contend that such behaviors as "crimes in the streets against persons and against property, family violence, deviance in organizations, deviant drug use, mental disorders, cyberdeviance, and sexual deviance" are all included under the definition of negative deviance.

Second, the researchers propose a category they call *rate-busting*. This refers to a behavior or condition that can be described as overconformity and elicits a negative response. Examples are made of "yes-men, rigid fools, prigs, and high-minded fools," or the overachieving student who might be extremely intelligent, but is simultaneously perceived to have no social skills, sense of fashion, and possess undesirable characteristics, thus labeling them as a "geek" or "nerd." In this case the deviation from the norm is exceeding the expectations and thus being labeled deviant not by the lack of conformity, but by overconformity (Heckert and Heckert 2002). Third, deviance admiration is as under-conformity where the deviant is cast in a good light or admired. Examples are drawn from real life historical figures like Al Capone and the Australian killer Edward "Ned" Kelly to literary accounts like Robin Hood. The authors argue that the causes for situations where the aforementioned characters might be seen as more positive than negative are rooted in the structure of the society. It can be an injustice that the "hero" had to endure, and thus breaking the law comes to be seen as something courageous or heroic (Heckert and Heckert 2002). The fourth and final category is positive deviance that is described by overconformity and is positively evaluated. Heckert and Heckert (2002:466) define it as: "Any type of behavior or condition that exceeds the normative standards or achieves an idealized standard and that evokes a collective response of a positive type." Here the main examples are altruism (e.g., Mother Theresa) and physical

attractiveness. Both of these examples exceed the norm, but are seen as good (Heckert and Heckert 2002).

Without dividing deviance up into categories, it is easy to see that, what actually constitutes deviance, changes depending on the audience, the actor, the situation itself, as well as on who decides the law. Over time the definition of deviance has stayed the same, but due to the evolving attitude of the society, certain things get added or removed from the list of deviant behavior. For example, acceptance of homosexuality has been on rise in most parts of the world and will probably continue this way in the foreseeable future until people don't even think twice about it. In contrast, if one looks at moral panics, the reverse is true. Curra (2015) describes these processes as defining deviance up or down, and this is done by the society as a whole.

1.2 The Relevance of Deviance in Research

After conducting research on self-injury and examining other issues (Adler and Adler 2014:33) make these concluding remarks about deviance:

> Be it tattoos, cigarettes, new drugs, creative forms of sex or multibillion dollar fraud widely perpetrated, people incorporate these new forms of behavior into their repertoire and accept (or reject) the creativity of the human soul for expanding the boundaries of normative behavior.

While some might find it discomforting that the use of "deviance" is excessively wide, covers too many topics, and is vague, it is the only concept that can be applied to all the behaviors or conditions mentioned by Adler and Adler. For the use of the term in empirical research Dellwing (2014:288; italics in the original) contends:

> That deviance is not "really" an objective category also does not make the category "too wide", as there is no abstract category except when it is produced, "fixed" in a concrete instance of use, and then it is so produced because it is supposed to *do something*. If that works, then it obviously was not too wide: It did its job.

In conclusion, the concept of deviance, its definition, and the sociology of deviance in general have been and in some ways still are criticized for theoretical issues (Best 2014). However, in line with the majority of scholars in the field (Adler and Adler 2006, 2014, Curra 2015, Dellwing 2014, Dotter 2002, 2014, Goode 2002, 2003, 2004, 2006, 2014, Heckert and Heckert 2002), I argue for the vitality of the concept of deviance and its role in our society and scholarly research. Keeping this point in mind, along with the argument of Dellwing (2014) for the concept's use in research, this dissertation will investigate deviant behavior among adolescents in online and offline environments, applying the definition of negative deviance proposed by Heckert and Heckert (2002). Furthermore, in all the studies conducted in this dissertation "deviant behavior," "deviance," and "cyberdeviance" refer to *acts* of deviance, not *conditions*. For the purpose of comparison of online and offline environments the terms "online deviance" and "offline deviance" are used. Thus, in this study, "cyberdeviance" and "online deviance" are used interchangeably and refer to the same concept.

1.3 The Rise of Cyberspace and the Changing Landscape of Deviance

With the arrival of the personal computer or PC in the 1980s and the proliferation of the Internet usage during the following decades, society has undergone dramatic changes in how we communicate and conduct our daily lives. It has brought many great positive advances and discoveries. We have also seen the advent of a whole new subset of behaviors and

opportunities for new types of communication that prior to the technological advancements did not exist. When the Internet became more widely used most of the initial attention was on the positive values and opportunities that were going to be created for everyone involved. The more integrated and connected our societies became the more vulnerable we were to any disruptions of our connectivity. Security became a serious issue. Nowadays, Internet addiction, online stalking, flaming, spamming, trolling, hacking, and cyberbullying among others have become household names in the countries where Internet is almost ubiquitous.

By 1976 there were already 374 cases of computer crime reported, with research indicating that at least 85% of the crime went unreported. Companies avoided reporting these crimes as they would attract a lot of publicity and negatively impact their image (Parker 1976). Hollinger (1997) describes this period (1946–76) as "The Discovery of Computer Crime." Incidents of computer crime were relatively rare and the targets were either large corporations or governments. With the invention of the personal computer and an increasing audience of users governments started to take computer crime and deviance much more seriously. In the period of 1977–1987, which Hollinger (1997) called "The Criminalization of Computer Crime", the first computer crime statute was enacted in 1978 in Florida. Until the end of the 1980s most of the computer crime was committed by insiders or company employees, however, increasingly it was the hackers who got vilified for anything to do with computer crimes (Hollinger 1997). Hollinger and Lanza-Kaduce (1988) note how similarly to other issues, for example, marijuana, alcohol prohibition or juvenile law, the media and certain interest groups play a significant role in enacting new laws. Extensive media attention to certain issue has been deemed as the most successful tool in pushing through new laws (Hollinger and Lanza-Kaduce 1988). This period of 1988–1992 Hollinger (1997) describes as "The Demonization of Hackers." It was epitomized by such characters as Robert T. Morris, Jr., who crashed the worldwide web and Kevin Mitnick, who was responsible for a number of

computer crimes and was nicknamed “the dark side hacker.” The last period (1993–present) identified by Hollinger in the book he edited (published in 1997) is called “The Censorship Period”. Here the focus turns away from virus writing and bank fraud and we can see a shift to a more social sphere of the Internet. New concerns about pedophiles using the Internet to find victims, pornography and censorship arise (Hollinger 1997).

Already in the 1980s and going into the 1990s the social aspect of the Internet got more and more attention. Studies started to look at how anonymity and other specific characteristics of technology affect behavior (Heim 1991, Kiesler, Siegel and McGuire 1984, Sproull and Kiesler 1986). Furthermore, Internet addiction and illegal downloading came to the forefront as big record label companies and movie studios started lobbying for the laws to be changed (Higgins, Fell and Wilson 2006). Even such innocuous areas as online dating have been tainted with fraud and scams which can cause the victim not only financial problems, but also affect their self-esteem and sense of autonomy (Rege 2009). The meteoric rise of Internet use has changed the social aspects daily communication. People have turned to technology for love, entertainment, as well as business, exploring new identities and re-shaping their existing ones. This has allowed for near myriad possibilities of which most are positive experiences (e.g., Cole and Griffiths 2007). However, with every new technological advance, there is the other side of the coin: the new possibilities and opportunities for deviant behavior in cyberspace.

As with the traditional sociology of deviance, the study of cyberdeviance is fragmented. With the spread of theories to other fields and the emergence of new fields (e.g., criminal justice or gay and lesbian studies) sociology of deviance conceptually has morphed into an interdisciplinary field (Durkin, Forsyth and Quinn 2006). The range of possible online transgressions that fit the definition of deviance is relatively wide and varies from the most insignificant misdemeanors to very serious criminal activities. Studies in education and

psychology mostly focus on cyberbullying (e.g., Juvonen and Gross 2008) and internet addiction (e.g., Engelberg and Sjöberg 2004), economists and legal scholars are almost exclusively interested in financial crime, fraud (e.g., phishing), digital piracy and possibly hacking (Dowland, Furnell, Illingworth et al. 1999, Moore, Clayton and Anderson 2009, Young, Zhang and Prybutok 2007), and criminologists, to a large extent, focus on digital piracy and hacking, as well as general online victimization (Higgins 2007, Jaishankar 2008, Yar 2005).

Besides the aforementioned, other possible deviant behaviors include trolling (Buckels, Trapnell and Paulhus 2014, Fichman and Sanfilippo 2014, Hardaker 2010, Thacker and Griffiths 2012), virtual rape (Dibbell 1993), online deception (Caspi and Gorsky 2006), flaming (Moor, Heuvelman and Verleur 2010), cyber stalking (Menard and Pincus 2012), and online pornography issues (Sirianni and Vishwanath 2015). Furthermore, the Internet has empowered groups that are shunned in the society and would face great hostility for any public event or a display of their interests which are in most cases outlawed. Among others these include groups interested in zoophilia (Maratea 2011) and pedophilia (Armstrong and Forde 2003).

1.4 Theories and Theoretical Frameworks Addressing Cyberdeviance

Deviant behavior in real life is very diverse, ranging from an innocuous misdemeanor such as littering on the street to grievous offences such as murder. The studies mentioned in the previous section show that this diversity is equally true for cyberdeviance. Deviance as a concept is always changing and evolving; mirroring the societal changes in how we conduct our daily lives, our language and norms. When it comes to cyberspace these changes become faster and more ambiguous. For decades now lawmakers have struggled, trying to decide how to apply law to the virtual world. A precedent was established in 2012 when the Dutch

Supreme Court ruled that the stealing of an amulet in a virtual world constituted actual theft and sentenced the perpetrator to 144 hours of community service (Associated Press 2012). One has to note that this case is an exception to the general rule, and most countries have been much more wary of criminalizing similar actions.

Studying cyberdeviance has mostly divided scholars into two camps. The first group has tried to apply the existing theoretical frameworks in sociology or criminology (e.g., social learning) to examine different behaviors in cyberspace. Researchers in this group argued that cyberspace is just an extension of the existing norms and traditional theories should be able to demonstrate this. The second group, mostly comprised of psychologists, has focused on the unique characteristics of the Internet (e.g., anonymity) and argued that cyberspace provides a distinct platform, separated from real life, and thus should be treated differently from the real world. This discussion is still ongoing, and both sides have made valid points and produced sound results from their respective perspectives.

First, let's examine the claim that cyberspace should be viewed as a realm separate from the real world. Already in the 1980s social psychologists examining computer mediated communication noticed how it was different from real life. Kiesler et al. (1984) described computer mediated communication as much more rapid, lacking in nonverbal cues, having diminished status differences, social anonymity, and having its own subculture. The study found that: "People in computer-mediated groups were more uninhibited than they were in face-to-face groups as measured by uninhibited verbal behavior, defined as frequency of remarks containing swearing, insults, name calling, and hostile comments." (Kiesler et al. 1984:1129) The authors argued that this increase in uninhibited behavior is due to lack of informational feedback, absence of social cues, and lack of nonverbal involvement and norms (Kiesler et al. 1984).

Closely related to anonymity is the concept of deindividuation. It originated already prior to the emergence of the Internet as we know it today. Festinger, Pepitone and Newcomb (1952) observed that people tend to behave differently and are less restrained when in groups. They attributed this phenomenon to de-individuation. Their research was later expanded by others, showing that diffusion of responsibility and other factors contribute to this phenomenon (Bandura, Underwood and Fromson 1975, Diener, Fraser, Beaman et al. 1976, Zimbardo 1969). Some scholars use anonymity interchangeably with deindividuation (Hinduja 2008) or as a contributing factor to deindividuation (Diener et al. 1976). On the other hand, some researchers have tried to differentiate between the two concepts and at the same time include them in one theoretical framework such as online disinhibition (Suler 2004).

Another development during the early times of the Internet were the Multi-User Dungeons (MUDs) and other "virtual" worlds (Hand 2010). The communities and social ties could represent an extension of real world ties, or they could be completely detached from the reality, not existing anywhere else but in cyberspace. They allowed their users not just to "*enact* their given identities but *re-write* them in a "post-social" world." (Hand 2010:358; italics in the original)

Thus, anonymity, the asynchronous nature of communication, and the lack of verbal cues have become the dominating aspects for explaining disinhibited and antinormative behavior in cyberspace (Joinson 1998, Lapidot-Lefler and Barak 2012, Suler 2004). Researchers favoring this view argue for the unique aspects of technology and cyberspace as one of the most important causes of increased cyberdeviance.

Second, a number of scholars have argued for the contrary, i.e., that cyberspace is an extension of existing social norms and human behavior in general (Dumitrica 2011, Grabosky 2001, Williams 2006). In recent years one of the fastest growing online domains has been

gaming. Dumitrica (2011) advanced the neo-liberal discourse by Ericson, Barry and Doyle (2000), arguing that the values that exist in the real labor market, i.e., obtaining education and accumulation of wealth, also extend to certain online games. Users of an online game *Neopets* were supposedly encouraged to cheat by the built-in system, which was based on neo-liberal values of wealth accumulation (Dumitrica 2011). Thus, one could argue that cyberspace offers an alternative reality where the rules are similar to the real world. The crucial question that Dumitrica did not address in her study is: Do those users who cheat in the game apply the same moral compass to their real life and thus engage in more offline deviance?

At the turn of the century Grabosky (2001) compared the criminal opportunities in cyberspace to street crime and argued that such factors as "motivation, opportunity, and the absence of a capable guardian" exist in cyberspace as well, and they are the basis for conflating both environments. Although Grabosky talks about crime, a similar approach can be applied to more minor deviant behavior. It is all too easy to imagine a frustrated or an overly enthusiastic teenager, who has gained access to the Internet and has just started exploring the exciting and myriad possibilities of expression and entertainment. Grabosky (2001) puts forward the claim that technology may evolve and change, but human nature stays the same. Thus, no matter the medium, those who engage in offline deviance, will inevitably engage in cyberdeviance as well. However, the rapid change in technology can sometimes help in dealing with cyberdeviance, because it adapts faster than regulations and social norms. Technology itself is not the sole answer, and certain regulations are needed in order to address the deviance in cyberspace (Williams 2006:139, 2007). Furthermore, research on crime and delinquency has shown that small things such as signs and architectural design can work as deterrents (Katyal 2002) and a recent study has shown that cyberspace is no different, and small deterrents work to reduce rule-breaking and criminal

behavior (Wilson, Maimon, Sobesto et al. 2015). Both groups, arguing for and against the unique nature of cyberspace, have well developed arguments, but what do the data and empirical studies reveal?

1.5 Empirical Investigations of Deviant Behavior

One of the earliest qualitative studies of three-dimensional (3D) virtual Multi-User Dungeon (MUD) by Williams (2006) in late 1990s tried to combine the social control theory of Hirschi (1969) and various other approaches, including disinhibition and techniques of neutralization. Interpreting social bonds proved problematic, as, for example, commitment was both seen as a catalyst and a hindrance to cyberdeviance. This was one of the first qualitative studies of online gaming communities, and, although some limitations have to be acknowledged here, the evidence pointed toward the connectedness or conflation of the 'real' and 'virtual' worlds (Williams 2006:111). Findings from other qualitative studies have also found evidence for cyberspace being an extension of real world norms (e.g., Maratea and Kavanaugh 2012). Although qualitative research provides rich descriptions and it is not limited by the constraints that hold back quantitative approaches, it is very difficult to compare similar studies and evaluate the effectiveness of a particular theory. In order to gauge the efficacy of traditional and more contemporary theories of deviance, a review of quantitative studies provides a much clearer picture.

During the 20th century among the most widely tested theories of delinquency and deviant behavior were social learning theory, general strain theory, and self-control theory. First, social learning theory posits that human behavior is learned through direct conditioning or imitation (directly imitating someone's behavior), differential reinforcement (through positive and negative stimuli that encourage or discourage certain behaviors), definitions (learning from existing norms, attitudes and orientations), and from differential association

with groups that are important to oneself (family and peer attachment; Akers, Krohn, Lanza-Kaduce et al. 1979). Thus, by imitating others, being punished or praised for certain behaviors, and being influenced by those who we respect and hold dear to us, our attitudes and norms develop. In consequence, these learned norms act as a moral compass, determining our actions.

Second, the general strain theory, unlike social learning theory, focuses explicitly on negative relationships with others and identifies with three major types of strain. According to Agnew (1992:50), others may "(1) prevent one from achieving positively valued goals, (2) remove or threaten positively valued stimuli that one possesses, or (3) present or threaten to present one with noxious or negatively valued stimuli." General strain theory claims that, when one is experiencing or faced with strain in his or her life, negative emotions like fear, frustration, depression or anger may arise from that strain. Consequently, those experiencing strain are more likely to engage in deviance.

Third, self-control theory focuses primarily on normative beliefs and attitudes. Gottfredson and Hirschi (1990:90) contend that: "people who lack self-control will tend to be impulsive, insensitive, physical (as opposed to mental), risk-seeking, short-sighted, and non-verbal, and they will tend therefore to engage in criminal and analogous acts." They argue for self-control as the most important factor for predicting crime and deviance.

Overall empirical evidence supports the above mentioned theories. Studies on delinquency have shown that social learning theory explains 68% of variance in marijuana use and 55% in alcohol consumption (Akers et al. 1979); general strain theory explains 49% for drug use and 40% for delinquency (Agnew and White 1992); and self-control theory: 20% for deviance such vandalism, alcohol consumption, drugs, and others (Vazsonyi et al. 2001).

The logical question to ask here is: Can these traditional theories be applied to cyberdeviance as well? Holt and Bossler (2014) did an extensive review of the existing literature and concluded that there is strong support for traditional criminological theories predicting cyberdeviance. Thus, the short answer is yes; however, traditional theories were not designed for cyberdeviance, making them perhaps less appropriate for such analysis. Furthermore, the explanatory power of traditional theories is markedly lower for cyberdeviance, compared to the studies mentioned in the previous paragraph. For example, in a study predicting music piracy, social learning theory explained only 13% of the variance in the dependent variable (Hinduja and Ingram 2009) and between 16% to 40% among various items of cyberdeviance (Skinner and Fream 1997). However, the latter study reported only unadjusted R squared values, which are always larger than the adjusted values and thus represent slightly inflated results. Patchin and Hinduja (2010) tested the general strain theory and its applicability to traditional bullying and cyberbullying. Their results showed that models with the theory explained 7% and 15% for traditional bullying, while the numbers were only 5% and 7% for cyberbullying. A study of self-control theory in conjunction with other variables by Moon, McCluskey and McCluskey (2010) to predict illegal downloading and illegal use of another's identity online showed similar results. Their final models explained only 7% and 6% of the variance in the dependent variables. Furthermore, in the former model for illegal downloading, self-control was not even a significant predictor.

Acknowledging that this is not an exhaustive list of all the studies, the overall evidence seems to suggest that traditional theories do not explain as much variance in cyberdeviance, as they do for offline deviance. Thus, they are not perfectly applicable to cyberdeviance.

A review of studies that investigate the unique aspects of online communication and cyberdeviance reveals very little. Existing research has found that online disinhibition (Casale, Fiovaranti and Caplan 2015) or some of its components are significantly related to

cyberdeviance (Hinduja 2008, Lapidot-Lefler and Barak 2012, Wright 2013). Nevertheless, in most of the studies, including those mentioned above, investigations of anonymity and deindividuation have been qualitative, experimental, or lacking reports of the r-squared values that would allow a comparison with other theories. An exception to this rule is a study by Proudfoot, Boyle and Clements (2013) who measured the influence of the belief that one's actions are not harmful on cyberdeviance. Their final model explained only 7% of variance in cyberdeviance. The view that one's actions have no consequences in cyberspace and insults are just letters on the screen can be found among adolescents and adults alike. However, this is only one dimension of online disinhibition. It is easier to investigate the nature of anonymity and online disinhibition employing an experimental design, which could explain the lack of quantitative approaches in the field.

In conclusion, traditional theories are good at explaining offline deviant behavior, but are not perfectly fit for cyberdeviance. On the other hand, social psychological explanations for cyberdeviance focus on disinhibition as a direct consequence of computer mediated communication; however these theories also explain only a moderate amount of cyberdeviance and there is a lack of quantitative studies.

1.6 Significance of the Problem

As shown in this chapter, deviance and deviant behavior have always been a part of society. Scholars in sociology and other fields have been trying to find overarching definitions and solutions to the various ills of our societies. Most of the research has concentrated on one specific topic (e.g., marijuana smoking). Furthermore, the emergence of the Internet and the rise of various new issues like cyberbullying and hacking have muddied the field even further.

The rapid advance in technology and the Internet have fragmented and separated scholars, who in most cases, either end up continuing the work they have been doing, ignoring the new

technology, or they end up focusing solely on the cyberspace, disconnecting their research from the real life, while concentrating on psychological traits and attitudes. This trend leaves many unanswered questions and creates a gap in the body of scholarly work. Traditional theories of deviance are not as good at explaining cyberdeviance, while newer theories, such as online disinhibition, have little empirical support and have not been tested thoroughly. Furthermore, studies that have applied traditional theories to cyberdeviance, rarely contemplate the connection between online and offline deviance. If these two categories do not overlap, then applying traditional theories doesn't make any logical sense.

The purpose of this study is to fill this knowledge gap. This study will investigate the overlap of online and offline deviance, the application of traditional and newer theories to cyberdeviance, and analyze the predictors of cyberdeviance. The research findings of this study have the potential to help parents, schoolteachers, law enforcement officers and other researchers to better understand the possible predictors and trends of deviant behavior in a present day context.

1.7 Research Questions

The main purpose of this study is to analyze a wide range of deviant behaviors among adolescents in real life and in cyberspace. Besides investigating gender, age, prevalence and trends of deviance, the study will address these two main research questions:

1) Does offline deviant behavior overlap or extend to cyberdeviance, or should they be viewed separately?

2) What are the predictors for cyberdeviance? Are they similar or different to offline deviance?

1.8 Summary

The study of deviance or deviant behavior in sociology started out as an examination of crime and accepted norms in society. With his seminal work, "Suicide," Emile Durkheim established a positivistic tradition among sociologists, influencing future research. In the first decades of the 20th century, deviance was clearly defined and measured, usually in tandem with crime. The Chicago School associated poverty and disorganized neighborhoods with deviant behavior. Widespread use of the term deviance began just after World War II, when a large number of articles were published. However, it was not long before critics inside and outside of sociology questioned the concept of deviant behavior. Emerging theories and movements, such as the labeling approach, conflict theory, and feminism all pointed out the various flaws of the sociology of deviance: it did not take into account certain minority groups and power relations in society at large. This led to a decline in the usage of the term. Simultaneously, and especially with the emergence of cyberspace, studies examining a wide range of behaviors from marijuana smoking to cyberstalking expanded greatly. At the turn of the 21st century the study of deviant behavior has been resurrected with theoretical advances in definition and usage. Thus, "deviant behavior" and "deviance" are chosen as the terms for scholarly analysis in this dissertation. An examination of traditional theories of deviance showed that they are not as good for predicting cyberdeviance; and there is a lack of discussion about the overlap of online and offline deviance. Furthermore, newer theories specially designed for the investigation of cyberdeviance have more theoretical than empirical support. The chapter concludes by stating the study's research questions to address this knowledge gap.

CHAPTER TWO – ONLINE AND OFFLINE DEVIANT BEHAVIOR AMONG HIGH SCHOOL STUDENTS: AN EXPLORATION OF FREQUENCIES, TRENDS, AND THE ONLINE–OFFLINE OVERLAP (STUDY ONE)

The discussion about the liberating effects of the Internet and how it will change our lives arose in tandem with the advances in technology. Before the rise of the cyberspace, television had caused an enormous cultural shift, allowing millions to access and enjoy content previously unavailable (Meyrowitz 1985). However, television was just passive entertainment and knowledge in the form of news and documentaries, whereas the Internet is interactive and allows the user to proactively participate. Accordingly the impact of the Internet on society has been enormous, affecting virtually every sphere of life. As it was discussed in the previous chapter, this change has not been only about the positive. Various new norms and subcultures of deviance have emerged in the cyberspace. The crucial question to be addressed in this study (Study One) is as follows: does deviant behavior extend online, or is cyberspace a separate and distinct entity or platform for deviance?

2.1 Deviant Behavior in Cyberspace

Very few studies have actually tried to systematize and examine a number of online behaviors in a single study. For example, Sternberg (2012) examined misbehavior culture during late 1990s in Internet Relay Chatrooms (IRC). She concluded that: "Gathering for social interaction in cyber places and participating actively in the regulation of online conduct may help promote a new sense of social place and civic concern." (Sternberg 2012:182) One of the most important factors of the Internet, especially for the younger generations, is the availability to connect with others via social networking sites or by writing a blog. When it comes to communication and social networks, adolescents predominantly use the Internet to connect with their friends and others they already know in real life (Reich, Subrahmanyam

and Espinoza 2012). Girls are more active than boys in communicating (Valkenburg and Peter 2007), which could explain the gender gap in online victimization, but not perpetration (Kowalski and Limber 2007). Technology and the Internet are inherently neutral, thus everything depends on how it is used. Some evidence suggests that a criminal lifestyle, such as being a gang member or having a record of offenses, can increase digital inequality (e.g., having spent a long time incarcerated would leave one behind the current technological trends), negatively affecting Internet adoption (Moule, Pyrooz and Decker 2013). A review of the existing literature by Patton et al. (2014) shows that, overall, deviant behavior and violence are moving into cyberspace.

A specific look at traditional bullying and cyberbullying reveals a possible overlap of the online and offline environments (Juvonen and Gross 2008, Raskauskas and Stoltz 2007, Vazsonyi, Machackova, Sevcikova et al. 2012). Furthermore, Jang, Song and Kim (2014) used the general strain theory and showed that traditional bullying victimization was significantly associated with cyberbully perpetration. However, studies that reported similar results have been criticized for not addressing the problem in a systematic way (Olweus 2012), and the latest findings indicate only a small overlap, i.e., more than half of cyberbullies being neutral at school (Kubiszewski, Fontaine, Potard et al. 2015).

The Internet allows like-minded users to congregate and share anonymously. This particular feature of anonymity has enabled various groups whose interests sometimes might lie in the grey area of the law or are outright illegal to share their opinion and ideas online. A number of deviant communities have emerged online, each accommodating specific interests such as pedophilia (Holt, Blevins and Burkert 2010a), zoophilia (Maratea 2011, Maratea and Kavanaugh 2012), self-injuring (Adler and Adler 2008), genital mutilation (Deshotels and Forsyth 2007), hacking (Yar 2005), prostitution (Blevins and Holt 2009), and female to male transsexuals (Gauthier and Chaudoir 2004).

An examination of the existing literature on deviant communities online shows that deviance and deviant identity are reinforced by the availability of cyberspace (Maratea and Kavanaugh 2012). This corroborates the classic approach of social learning and association with deviant peers. Associating with similarly thinking deviant peers online has already been linked to increased perpetration of music piracy, although the effect was stronger for offline peers (Hinduja and Ingram 2009). Stanly Cohen looked at various British subcultures in the pre-Internet era, arguing that trying to forcefully regulate social norms actually has the counter effect, reinforcing the deviant label on some, and thus further alienating them from commonly accepted social norms (Horsley 2014:90). Another example is digital piracy where forced rules and regulations have not deterred the would be downloaders, and a more nuanced approach of changing attitudes and norms is necessary for making any progress (Al-Rafee and Cronan 2006, Downing 2010). This is in line with research on online aggression where Xu, Xu and Li (2015) showed that culture or face saving and moral beliefs in Chinese context were better deterrents than community policy. Do these findings mean that we should allow all the possible variations of cyberdeviance, or should we restrict only those that openly advocate law breaking? The ambiguous nature of the Internet has made this a very blurry area: a contestation of freedom of expression and censorship.

Another example of online communities and complex relationships can be seen in online gaming. In recent years the number of online games and players has increased enormously. One of the best examples of a mirror world is the massively multiplayer online role playing game (MMORPG) category. These games encompass complex societies with their own rules and norms, either in a setting similar to the real world (e.g., Second Life) or a completely made-up fantasy world (e.g., The Lord of the Rings Online). Although research in this area is still scant, preliminary results show that for most players real life ethics also apply in online games as well (Downing 2009).

If one thinks of a hacker, the image might be that of a timid teenager sitting in front of his computer screen. Using the Computer Crime Index, which mostly focuses on hacking, digital piracy and similar activities, Rogers et al. (2006a) focused on psychological traits of the respondents. Results showed that online deviants exhibited manipulative psychological traits, which are also found in traditional and white-collar crime. Furthermore, introversion was not a significant factor, contradicting the image of the introvert hacker (Rogers et al. 2006a). A separate study on 1,222 British university undergraduate students indicated that the overlap between online and offline misbehavior involving digital piracy, unauthorized access of someone's account, misrepresentation of self, plagiarism and pornography is significant (Selwyn 2008). The study used the same items tailored for online and offline contexts (e.g., copying a pirated CD from a friend or downloading a pirated CD on the Internet) which enabled the researchers to directly compare the two categories. All of the 13 offline items were significant predictors of their online counterparts (Selwyn 2008). A longitudinal study by Kim and Kim (2015) explored problematic offline behavior (e.g., drinking and smoking) among 2,909 high school students and found that it was a significant predictor of future cyberdeviance, in this case cursing or insulting someone online. Unfortunately, the study did not examine any other online behaviors thus limiting the generalization of their results. The study did show that deviant behavior decreases with age, however, the authors caution that social desirability could be affecting this outcome (Kim and Kim 2015). Using a similar sample but comparing different types of schools in multilevel analysis, another study on Korean youth found a significant link between alcohol use and Internet delinquency (Lee, Onifade, Ryu et al. 2014). To strengthen the case of the online–offline overlap, Ma, Li and Pow (2011) studied prosocial or positive behavior among adolescents, finding that there were significant associations between the Internet and daily practices in the real world.

2.2 Purpose of the Study

From the literature review, we see that there is a substantial amount of evidence that supports an overlap of online and offline deviance. However, the main approach of these studies in most cases is to apply theoretical frameworks to certain behaviors, both online and offline, without directly measuring the overlap. Just because one predictor is significant in two models doesn't automatically indicate an overlap between two behaviors. What's more, to date very few studies have tried to examine deviant behavior among adolescents in a broader perspective that includes both the real world and cyberspace.

Thus, the purpose of this study is twofold: first, it will seek to examine the prevalence of a wide range of deviant behaviors. This study will include a number of behaviors examining general deviant behavior (e.g., cheating on an exam offline and digital piracy online), peer deviance (e.g., bullying and cyberbullying) and displaced online aggression, where the victims are innocent bystanders or strangers.

Second, this study will investigate to what extent the online and offline overlap claim is true. Using a number of subscales for different types of deviant behavior for both online and offline deviance such as peer (e.g., bullying and cyberbullying) and general (cheating on tests and digital piracy), will allow measurement of the overall deviant behavior overlap, as well as presentation of a more nuanced and detailed approach to subtypes of deviance.

2.3 Methods

2.3.1 Participants

A total of 862 questionnaires were distributed in four schools in Osaka, Japan. Fifty-nine responses were excluded from the analysis due to being incomplete (93.2% completion rate).[1]

[1] Questionnaires with more than 20% of missing values and questionnaires with more than seven out of the total of thirteen scales having only one number as the chosen answer were

The final sample included 803 senior high school students: 326 males (40.6%), 476 females (59.3%), and 1 not specified (0.1%) aged between 15 and 18 years old (M=16.36, SD=.94; two cases not specified). Each school had two classes from each of the three grades participate in the survey. The final distribution of students in the first through third year was as follows: 34.6%, 34.9% and 30.5% respectively. The participant schools were not chosen randomly, making the data a convenience sample. The main reason for refusal to participate was due to the sensitivity of the questions and time constraints. The final sample did, however, include schools with different academic levels. One school could be categorized as elite (School A), two were above average (School B and School C), while one was at the bottom of academic achievement (School D). The survey for this study was conducted July through September 2015.

2.3.2 Measures

The main purpose of the study was to examine the various dimensions of deviant behavior online and offline, using a total of 30 variables.[2] These variables were divided into subgroups as follows: two scales for offline deviance (general and peer) and three scales for cyberdeviance (general, peer and aggression; see Table 3 on page 34 for a summary of the scale descriptives). Offline general deviance was measured by 9 items (e.g., "Cheated on a test or an exam." See Table 1 on page 32 for the full list of items). Offline peer deviance was measured with 3 items: "Tease about one's body or way of speaking," "Exclude or shun someone from circle of friends," and "Engage in physical fights with classmates." Afterwards these two scales were summed up to create an overall metric measuring offline deviance.

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deemed invalid and excluded from the final sample.

[2] Originally there were 30 variables, but one school refused to include them in their questionnaires. It was deemed more useful to use all four schools with 25 variables, instead only three schools with the full set of variables. The removed variables concerned such behaviors as alcohol and drug use among others and thus were deemed too sensitive by one of the schools. See the complete questionnaire in Appendix 2.

Online general deviance was measured by 5 items: “Downloaded pirated software (music, movies, games etc.),” “Uploaded or shared pirated software (music, movies, games etc.),” “Watched online material that was not age appropriate (e.g. pornography),” “Hacking (accessed computer networks illegally or without permission),” and “Wrote insulting comments with the intent of provoking others.” Online peer deviance was measured with the following 4 items: “Uploaded/published a picture or video online without permission,” “Spread messages containing insults or bad rumors among classmates or acquaintances,” “On the Internet (social networking sites, text messages, email) insulted someone,” and “On the Internet (social networking sites, text messages, email) excluded or shunned someone from circle of friends.” For all the aforementioned scales the respondents were asked to think about the past 12 months and answer either affirmatively or negatively to each item (coded as 0=no experience and 1=experience). Afterwards the all the items in each scale were summed up.

Next, an online aggression scale was adapted from a study by Wright and Li (2012) to measure how often the target of online aggression was just an innocent bystander. The scale had an introductory comment to the respondents, explaining that their victims could not be the causes and had no connection to their frustration or anger. Four items were included in the scale: “Left them out of an activity or conversation,” “Spread bad rumors about them,” “Ignored them,” and “Posted mean or insulting things about them.” In the Japanese translation each item specifically stated that these actions refer to the Internet. The items were measured on a 5 point Likert scale and ranged from “Never,” “Almost never,” “Sometimes” to “Almost all the time” and “All the time.” Next, the items were collapsed and coded as either 0=no experience or 1=experience (all of the answers except “Never” were coded as 1), and then summed up. The items were dichotomized for the congruence of the overall deviance scale as the other subscales are all dichotomous, as well as for better internal

consistency (Bendixen, Endresen and Olweus 2003). Afterwards all three online deviant behavior scales were summed up to create an overall metric measuring online deviance.

Besides measuring deviant behavior, a number of covariates were included in the analysis. Gender was coded as 0=female and 1=male. Computer availability at home was coded as 0=no computer at home to use and 1=computer at home to use. A short form of the Marlowe-Crowne Social Desirability Scale (MC-C), consisting of 13 items (M=6.32; SD=2.73; KR-20=.66; see full list of items (26.1–26.13) in Appendix 2), was included in the study (Reynolds 1982). The purpose of this scale was to measure social desirability bias, i.e., the tendency of respondents to provide answers that are favorably viewed by others. It was expected that those students who exhibited smaller bias would report more frequent engagement in deviant behavior. The values for the scale were calculated according to the established criteria, giving a point for each socially biased answer and then summing up those scores.

2.3.3 Procedure

The survey questionnaires were distributed in the classroom by the teacher in charge of the class or the teacher who was responsible for data collection at that particular school. Depending on the school, the purpose of the survey was explained to the whole school beforehand, or only to the students participating in the survey. Students were told about the purpose of the study and informed of their right to not participate in the survey or to not answer any questions they would feel uncomfortable with. Classes that participated were allotted 15–20 minutes to fill out the questionnaires. Together with the questionnaires, each student also received an envelope. When a student completed the questionnaire, they were asked to enclose their questionnaires in the envelope and hand it back to the teacher in charge of the survey. These procedures and the questionnaire contents were approved by the

Research Ethics Committee, Departments of Sociology and Anthropology, Graduate School of Human Sciences, Osaka University (application #2015011).

2.3.4 Data analyses

All analyses were conducted in R (ver. 3.2.2). The significance level was set at $p<0.05$.

2.4 Results

2.4.1 Frequencies

In this study 97.8% of the students owned a cellular phone or a smartphone, and 59.2% had access to a PC at home. Only 5% of the respondents answered negatively to all of the 25 deviance items. Summing up all the items into one scale (M=5.28, SD=3.79) revealed that almost half of the respondents (48.7%) scored between 2 to 5 points, and only 2.1% scored 15 points or more. Looking at Table 1 we can see that, depending on the seriousness of transgression, deviant behavior frequencies vary greatly. The most frequent item, with 77.5% of all respondents answering affirmatively, was crossing at a red light, while the least frequent one was hacking (1.5%). Not surprisingly a higher percentage of males admitted engaging in almost every item except for copying someone's essay or homework and taking your anger out on someone or something where females edged out males by a small margin. The largest discrepancy was for hacking where males outnumbered females more than 7 times. Crosstab analysis comparing online and offline deviance (see Table 2) indicate that the relationship between the variables was significant, but very weak (Phi-Coefficient=.111, $p<.01$). However, these numbers were clear in showing that there were very few cases exclusively of cyberdeviance.

A comparison of deviant behavior among the three high school grades showed varying results. The largest proportion or 9 items had the highest frequency among 2nd graders (1–3, 7, 9, 15, 18–20). For 8 items deviant behavior decreased from its peak in the 1st year to the lowest

during the 3rd year (4, 8, 12, 21–25). For 5 items the opposite was true and deviance increased yearly and peaked during the 3rd year (5, 6, 13, 14, 17). Lastly, for 3 items the highest prevalence was during the 1st year. It then dropped to its lowest in the 2nd year, and afterwards increased in the last year of high school, while remaining lower than the 1st year (10, 11, 16).

Table 1. Frequencies of deviant behavior items.

Item	Mean (SD)	Overall (%)[a]	Male (%)	Female (%)	Grade 1 (%)	Grade 2 (%)	Grade 3 (%)
Offline deviance (general)							
1. Took something (wallet, umbrella etc.) from someone without permission	.10 (.30)	9.9	17.7	4.6	5.4	15.1	9.1
2. Skipped school without valid reason	.20 (.40)	19.6	26.1	15.2	11.5	24.8	22.8
3. Cheated on a test or an exam	.05 (.23)	5.4	9.0	3.0	4.3	6.1	5.8
4. Took your anger out on someone or something	.54 (.50)	54.3	52.8	55.5	56.5	55.8	50.2
5. Copied someone's essay or homework	.62 (.49)	61.6	61.2	61.7	60.8	61.0	63.1
6. Crossed the street while the light was red	.78 (.42)	77.5	78.2	77.2	74.0	79.1	79.7
7. Told my parents that I was going to school, but did not go	.18 (.39)	18.4	20.2	17.3	16.5	20.1	18.7
8. Damaged a classmate's or the school's property	.10 (.30)	9.7	15.2	5.9	11.2	10.8	6.6
9. Parked my bike where I wasn't supposed to	.47 (.50)	47.2	51.6	44.3	44.4	50.5	46.5
Offline deviance (peer)							
10. Teased about one's body or way of speaking	.36 (.48)	35.6	46.8	28.1	36.1	35.1	35.7
11. Excluded or shunned someone from circle of friends	.10 (.31)	10.5	13.8	8.2	11.9	9.7	9.8
12. Engaged in physical fights with classmates	.03 (.18)	3.0	5.8	1.1	3.6	2.9	2.4
Online deviance (general)							
13. Downloaded pirated software (music, movies, games etc.)	.17 (.38)	16.8	21.3	13.8	13.0	17.3	20.4
14. Uploaded or shared pirated software (music, movies, games etc.)	.06 (.24)	6.0	10.0	3.4	4.3	6.5	7.5
15. Watched online material that was not age appropriate (pornography etc.)	.21 (.41)	20.8	42.6	6.1	16.4	24.5	21.6
16. Hacking (accessed computer networks illegally or without permission)	.02 (.12)	1.5	3.1	0.4	1.8	1.1	1.7
17. Wrote insulting comments with the intent of provoking others	.04 (.19)	3.8	7.5	1.3	3.3	4.0	4.1
Online deviance (peer)							
18. Uploaded/published a picture or video online without permission	.12 (.33)	12.0	18.8	7.4	11.2	14.7	9.8
19. Spread messages containing insults or bad rumors among classmates or acquaintances	.08 (.28)	8.2	8.9	7.8	8.7	9.3	6.5
20. On the Internet (social networking sites, text messages, email) insulted someone	.05 (.22)	5.1	7.7	3.4	5.1	6.1	4.1
21. On the Internet (social networking sites, text messages, email) excluded or shunned someone from circle of friends	.03 (.16)	2.8	5.0	1.3	3.6	2.5	2.0
Online deviance (aggression)							
22. Left them out of an activity or conversation	.26 (.44)	25.7	35.3	19.2	29.2	24.8	22.9
23. Spread bad rumors about them	.23 (.42)	23.5	31.9	17.8	26.0	22.6	21.6
24. Ignored them	.28 (.45)	28.4	36.7	22.8	30.9	30.6	23.3
25. Posted mean or insulting things about them	.21 (.41)	21.1	30.6	14.6	22.6	21.5	18.8

[a]Essentially the overall percentage can be approximated from the mean values because of the dichotomous nature of the items, but both are displayed for an easier reading of the table.

Table 2. Crosstab analysis of online and offline deviant behavior.

	Online deviance	
Offline deviance	No	Yes
No	38 (4.9%)	22 (2.8%)
Yes	306 (39.3%)	412 (53.0%)

N=778; 1=experience for at least one item in the offline or online scales, otherwise 0=no experience. Chi-square=9,633, Phi-Coefficient=.111, $p<.01$.

One might expect that the schools with lower academic achievement experience the most problems of deviance, but these data show that it is not always the case. School D had the highest prevalence of deviant behavior in 20 of the 25 items. When it came to copying someone's homework or essay, School D (50.9%) was around 10% behind the lowest of the academically higher achieving schools (School A, B, C: 65.6%, 60.1%, 66.7%). Furthermore, two of the three items ("Teased about one's body or way of speaking" and "Excluded or shunned someone from circle of friends") examining offline deviant behavior among peers or bullying had the highest prevalence in School A (36.3% and 12.6%) and B (40.7% and 12.4%), followed by School D (34.8% and 10.1%), and finally School C (30.9% and 6.9%). The third item for offline deviance among peers, asking about engaging in physical fights, put School B at the top with 4.8%, followed by School D (4.4%), and clearly lower rates for School A (1.9%) and School C (1.4%). The only item examining cyberdeviance, where School D didn't show the highest prevalence, was watching online material that is not age appropriate. The frequencies for the four schools were as follows: School B (28.4%), School D (25.2%), School C (16.9%), and School A (14.4%).

2.4.2 Correlations

Two-tailed Pearson correlation analysis was used to examine the relationships between all the deviant behavior scales (see Table 3 for scale details). Both overall scales measuring offline and online deviance showed acceptable reliability. However, some of the subscales performed worse. Most notably, the offline and online peer deviance subscales had relatively low KR-20 scores. In order to justify their use in the subsequent correlation analyses, the more rigorous confirmatory factor analysis (CFA) was conducted. Both subscales showed acceptable fit.

All of the deviant behavior scales were significantly correlated with each other (see Table 4). Excluding the association between the overall deviance scales and subscales, the strongest

correlations were between deviant behaviors in the same category: online and offline general deviant behavior with Pearson's r=.36, *p*<.001 and peer deviant behavior in both settings (Pearson's r=.38, *p*<.001). The weakest correlation was between online aggression and general online deviance (Pearson's r=.17, *p*<.001). Most notably, the correlation between the overall offline and online deviance scales was moderately strong: Pearson's r=.43, *p*<.001.

Gender was significantly correlated with all the deviance scales, showing that males are disproportionately more likely to engage in deviant behavior. Age was not significantly correlated with any of the scales, although there might be a possible connection with online aggression (Pearson's r=-.06, *p*=.08).

Table 3. Deviant behavior scale information.

	Overall		Male		Female		
	Mean	SD	Mean	SD	Mean	SD	KR-20[a]
1. Offline dev. (general, 9 items)	3.04	1.90	3.33	2.09	2.84	1.74	.68
2. Offline dev. (peer, 3 items)	.49	.66	.67	.76	.37	.58	.33
3. Online dev. (general, 5 items)	.49	.90	.85	1.12	.25	.61	.61
4. Online dev. (peer, 4 items)	.28	.64	.40	.76	.20	.53	.51
5. Online dev. (aggression, 4 items)	.98	1.55	1.33	1.74	.75	1.36	.93
6. Offline dev. (overall, 12 items)	3.52	2.22	3.99	2.46	3.21	1.98	.69
7. Online dev. (overall, 13 items)	1.72	2.25	2.56	2.61	1.20	1.78	.79

[a]KR-20 or the Kuder and Richardson coefficient is the equivalent for Cronbach's alpha which is used in cases when scale items are dichotomous.

Table 4. Online and offline deviant behavior correlations.

	1	2	3	4	5	6	7	8	9	10	11
1. Gender	–	-.03	-.13***	-.05	.13***	.21***	.33***	.16***	.18***	.17***	.30***
2. Age		–	-.06†	.03	.01	-.02	.07	-.03	-.06††	.00	-.01
3. Computer at home			–	-.04	-.02	-.03	.00	-.01	.00	-.02	.00
4. Social desirability				–	-.35***	-.29***	-.14***	-.22***	-.22***	-.38***	-.27***
5. Offline deviance (general)					–	.34***	.36***	.32***	.22***	.96***	.39***
6. Offline deviance (peer)						–	.24***	.38***	.22***	.59***	.34***
7. Online deviance (general)							–	.24***	.17***	.38***	.58***
8. Online deviance (peer)								–	.37***	.39***	.63***
9. Online deviance (aggression)									–	.25***	.86***
10. Offline deviance (combined overall)										–	.43***
11. Online deviance (combined overall)											–

Two-tailed Pearson's Correlations. ***p<.001; †p=.076; ††p=.084.

Having a computer at home didn't have any significant correlations with any of the deviance scales, indicating that access to technology through a PC is not important for cyberdeviance. However, social desirability clearly had significant negative correlations with deviant behavior. The largest effect size was for offline deviant behavior: general deviance (Pearson's r=.35, $p<.001$), followed by peer deviance (Pearson's r=.29, $p<.001$). Finally, a closer look at the Marlowe-Crowne Social Desirability Scale (M=6.32; SD=2.73; KR-20=.66) showed that females score slightly higher than males (females= 6.42, SD=2.75; males=6.16, SD=2.69). However, a separate Pearson's chi-squared test comparing scores for each gender was not significant (p=.31).

2.5 Discussion

The results from this study confirm that deviant behavior is part of Japanese society and very few respondents (5%) denied perpetrating any of the 25 items listed in the survey. One has to note that some of the items were very light misdemeanors (e.g., crossing at a red light), and for a number of reasons most members of the society will violate certain norms depending on the situation. These results just confirm how integral deviance is to our daily lives, and how easy it is to label someone deviant. However, most of the respondents' scores were on the lower half of the scale with 48% scoring between 2–5, and only 2.1% equaling or exceeding 15 points. These low scores could be partially explained by culture. Japan is known for its low crime rate which has been attributed to strong social control and conformity among other factors (Komiya 1999), but whether these incentives extend to less serious deviant behavior is still an open question.

A comparison between genders showed that males report more deviant behavior in 23 of the 25 items. The only exceptions were taking out one's anger on something or someone and copying someone's essay or homework. Previous research has already clearly established that

males are disproportionally responsible for most crimes and deviant behavior (e.g., Newburn and Stanko 1994), and this study is no exception. The unexpected result was that females exceeded males in the two items mentioned above, albeit the discrepancy was very small, and Pearson's chi-squared tests comparing means were not significant. It is possible that the academic pressure and competition required at Japanese high schools have pushed students to achieve to such a level that copying their homework has become the norm. It has become a necessity for some in order to survive the competitive academic environment that has been described as "exam hell" in Japan (Doyon 2001). Research around the world shows that females routinely do better at schools and universities than males (e.g., Sheard 2009). The lack of motivation for males could be just a sign that they do not even care enough to copy someone's homework in order to get better grades. However, when it comes to cheating on tests males scored three times higher than females (9% versus 3%) with Pearson's chi-squared test confirming a significant difference ($p<.001$). It is possible that copying homework is seen as less serious of an offence than cheating on exams and is thus more attractive to female students trying to get the better grades. The other item where females exceeded males was "taking out one's anger on something or someone." Taking out one's anger could reflect how society encourages boys to control their emotions, thus enabling more girls to actually let their emotions out. Nevertheless research on externalizing emotions paints a more nuanced picture: boys exceed girls, but only until they reach adolescence (Chaplin and Aldao 2013).

Online deviance targeting peers ranged between 2.8% and 12%, which is rather low, considering the prevalence of cybervictimization. This discrepancy has already been highlighted in other studies around the world (Tokunaga 2010) and in Japan specifically (Udris 2015). One of the key issues in the current study as well is the survey framework which relies on self-report. Peer nominated and self-reported bullying behavior do not always

show a strong correlation (Cornell and Brockenbrough 2004, Lee and Cornell 2009). When it comes to Japan, the overriding collectivism and culture of conformity, discouraging students to seek help, talk about their problems or, in this case, admit wrongdoing, could explain part of the frequency of socially desired answers (Aoyama, Utsumi and Hasegawa 2012). Crosstabs analysis, comparing online and offline peer deviant behavior (dichotomous variables), showed a moderate overlap (Phi-Coefficient=.313, $p<.001$). Existing evidence is full contradictory reports, which could be attributed to the diverse definitions and methods applied in bullying research. Nevertheless, this study points out the significant connection that exists between real life and in cyberspace.

A closer examination of the 5 general online deviance items (items 13–17 in Table 1) reveals that overall perpetration rates are low. The data demonstrate a very large gender gap (Pearson's chi-squared tests for gender differences were significant for all 5 variables at $p<.01$). The downloading rate (16.8%) is less than half of the world average which stands at 47.47% (see Chapter Three for an international comparison). Moreover, the comparison is made between the third year students in this sample and middle school students that comprise the sample in Chapter Three. Uploading and sharing stood at only 6.0%, much lower than the 20.7% found in other studies with middle and high school samples (Donner, Marcum, Jennings et al. 2014).

Online pornography use over the past 12 months stood at 20%, but the key issue here is the gender gap: 42.6% among males and 6.1% among females. These numbers are well below reported results from other countries around the world. A Taiwanese study reported 40% among a combined sample of middle and high school students in the past one or two years (Lo and Wei 2005), and a Swedish one reported 86% (males=98% and females=72%) among third year high schoolers, although the study asked about lifetime experience (Häggström-Nordin, Hanson and Tydén 2005). Studies on university undergraduates have shown similar

differences in gender, e.g., 73% for males versus 14% for females with an overall rate of 40% at a number of UK universities within a 12 month time frame (Selwyn 2008). To date no study has tried to find out why Japanese adolescents are consuming less of it. A study in the USA analyzed exposure to internet pornography and found it significantly related to self-reported delinquency (Ybarra and Mitchell 2005), corroborating the findings in this study that pornography is closely tied to deviant behavior among adolescents. Lower rates of deviant behavior in general could explain why watching pornography is not as ubiquitous as it is in other nations.

A similar comparison on hacking exhibits an even greater difference: an overall rate of 1.5% versus 5.4% for the international average (see Chapter Three for an international comparison). Lastly, the rate for writing insulting comments with the intent of provoking others or trolling was 3.8 percent. Arguably this dissertation is the first study to report hacking and trolling perpetration rates among high school students in Japan, thus future research is needed to confirm these findings. Hacking can be a complicated activity that involves a specific skillset, unless a password was stolen or just acquired by accident and then used to access someone's e-mail or social networking account. In contrast, trolling does not require good programming skills and thrives in the anonymous cyberspace, but why so few respondents acknowledged engaging in it is still an open question. Again, social desirability might give a clue. While most of the other deviant behavior items have no victims or the action could be accidental or done in an emotional state, trolling is specific in provoking others and taking gratification from their pain or suffering. Trolls primarily exhibit sadistic personalities (Buckels et al. 2014), which could explain why there were far fewer respondents admitting to trolling than, for example, online aggression. In this sample it was predominantly males who admitted to trolling (males: 7.5%; females: 1.3%).

An examination of trends for deviance revealed a diverse picture. The largest proportion was comprised of items that peaked during the second year of high school. When it comes to peer deviant behavior (online and offline), three out of seven items peaked during the second year. Engaging in physical fights and excluding or shunning peers online showed a decreasing trend over the years. These results should be interpreted with caution, as they include only students in senior high schools. Previous studies have shown that self-reports on being bullied do decline over the period from 8 to 16 years of age, however self-reports on bullying others do not (Smith, Morita, Junger-Tas et al. 1999). Future studies should incorporate samples covering all levels of primary and secondary education to examine trends in self-report bullying behavior.

The data gathered in this study show that only a few of the deviance items increased during the three high school years. Two of them are downloading and uploading pirated material: the former rose to 20.4% among the third year students from 13% in the beginning of high school. The increase for uploading is less pronounced: from 4.3% to 7.5 percent. This corroborates previous findings in other studies showing an upward trend in digital piracy (Gunter, Higgins and Gealt 2010). Hacking and watching pornography did not exhibit clear trends over the three grades in high school. As for hacking, one would expect an increase because of the skill that is required to be able to do it. On the other hand, the realization of the seriousness of the crime and maturation into adulthood might work against the propensity to hack. A more detailed study is required to analyze these competing hypotheses.

Whether we consider bullying or deviant/delinquent behavior, it is difficult to establish a trend over only a three year period. It seems that some behaviors should be examined separately, and preferably in a longitudinal framework, to be able to gauge the onset, rise and possible decline in the activity. While bullying self-report frequency might stay the same over the years, a longitudinal examination of delinquent behavior by Dutch students over a six

year period (all items refer to actions that are punishable by law) showed that over half of adolescents did not follow a consistent trajectory, i.e., they had period of at least one or more years of no delinquent behavior (Landsheer and van Dijkum 2005). However, a longitudinal study in Korea has shown that cyber-delinquency (6 item scale measuring various online deviance variables) peaks during the first year of middle school and then gradually declines (Kong and Lim 2012).

All four schools in this study were ranked by the academic achievement of their students (from A to D) and compared. The lowest achieving school had higher rates of deviance in 20 of the 25 items. Three of those items measured offline peer deviance (i.e., school bullying). The data clearly indicate that in this study lower academic achievement is not related to school bullying, which is in line with previous studies (Woods and Wolke 2004). However, a look at the general deviant behavior scale showed a complete reverse in numbers, corroborating the findings of Junger-Tas (1989) and Shann (1999), who examined delinquency and a broader set of antisocial behaviors (e.g., damaging school property) and found them more prevalent in the lower achieving schools. Furthermore, labor laws and working hours for students with jobs have been associated with higher dropout rates and delinquency (Apel, Bushway, Paternoster et al. 2008). Unfortunately this study did not inquire about work, thus a direct comparison cannot be made.

The social desirability scale was significantly correlated with all the deviance scales, thus showing an effect of the tendency to produce socially desired answers. Compared to previous studies, the Japanese high school students exhibit higher levels of social desirability bias. With the overall mean score of 6.32 (females=6.42; males=6.16) they exceed the scores from the original study conducted by Reynolds (1982) on 608 undergraduate students (overall mean=5.67, SD=3.20). The same difference can be seen when comparing with other studies that show lower scores: M=5.92, SD=3.61 (Robinette 1991) among military trainees and

M=4.15, SD=2.93 (Zook and Sipps 1985), M=5.76, SD=2.68 (Loo and Thorpe 2000), and M=5.50, SD=3.00 (Salsman, Brown, Brechting et al. 2005) among university students. All of the aforementioned studies employed a sample in the USA or Canada. This could point to a cultural difference between the individualistic Western countries and Japan which values conformity highly, increasing the likelihood of social desirability bias.

In conclusion, this study has shown that deviant behavior is prevalent and very few adolescents can say they have not perpetrated any of the behaviors examined in this study, although the mean average is 5.28 on a 0–25 scale, i.e., most respondents are guilty of only a few misbehaviors.

The online–offline overlap is largely supported in this study. Correlations between offline and online deviance subscales varied slightly, ranging between .22 and .38 as measured by Pearson's r. Furthermore, the overall offline and online deviance scales showed moderately strong positive correlations (Pearson's r=.43). In light of this evidence we can conclude that close to a half of deviant behavior overlaps between online and offline dimensions. With such a significant overlap even those traditional sociological theories that were designed for studying delinquency and offline deviance are bound to show some significance in predicting cyberdeviance. On the other hand, more than half of the deviance does not overlap, clearly indicating that cyberdeviance should be analyzed differently from offline deviance. Thus, the next step is to evaluate the relevance or lack thereof for traditional theories, before discarding them in favor of newer theories designed to predict cyberdeviance.

2.6 Limitations

The results in this study should be considered in the light of its limitations. First, the research employed self-reports which can induce socially desired answers. This was confirmed by using the short form of the Marlowe-Crowne Social Desirability Scale (MC-C), which

indicated that those who score higher on the scale were on average less likely to report deviant behavior. Second, only those schools that agreed to participate were included in the survey due to the sensitive nature of the questions. Third, the sample was comprised of four urban high schools in a large city. The differences among schools were sometimes quite large, which suggests the need for a larger study to get a more even and generalizable result. Fourth, the study was cross-sectional. Future research should examine how the different deviant behaviors change over time and which factors contribute to this change to corroborate the findings from this study.

2.7 Summary

To date, studies on deviance and deviant behavior have mostly concentrated on a specific topic or behavior, ignoring its broader implications. Furthermore, with the emergence of the Internet and the subsequent rise of a whole new category of deviance, an important question arises: do the online and offline environments overlap when it comes to deviant behavior? The purpose of this chapter was to address both of these concerns and analyze deviance in the 21st century. A sample of 803 high school students (mean age 16.36) was administered a survey about their experience concerning 25 items (divided into 5 separate scales) of deviant behavior. The results showed a wide variance in perpetration rates depending on the item in question. Only 5% of the respondents answered negatively to all the deviance items. Overall, students at lower ranked schools were more likely to engage in deviant behavior. Social desirability bias was found to have an impact on respondents' answers, as those who scored higher on the scale were less likely to admit and commit deviant behavior. All of the scales examining deviant behavior showed significant correlations, indicating a moderate online–offline overlap. This supports the view that cyberdeviance is unique in comparison to offline deviance. However, before completely focusing only on new theories, the next chapter will investigate the usefulness of traditional theories for predicting cyberdeviance.

CHAPTER THREE – CROSS-NATIONAL STUDY OF DOWNLOADING AND HACKING PRACTICES AMONG ADOLESCENTS: THE ROLE OF FAMILY, SCHOOL, AND NEIGHBORHOOD (STUDY TWO)

In the previous chapter, Study One revealed that the online–offline overlap of deviant behavior is moderately large. On the other hand, a review of literature in Chapter One argued for the relevance of traditional sociological theories of deviance in the study of cyberdeviance. Thus, the purpose of this study is to put these theories to the test. Are traditional theories of deviance still relevant in the 21st century?

With the advent of new technologies and the ubiquity of the Internet, the world is now more connected than ever. Internet access around the world is increasing rapidly and, at the moment, Internet access for household stands at an average of 71.6% for OECD countries (Organisation for Economic Co-operation and Development 2012). The Internet has proven to be extremely helpful, but it doesn't come without a cost. Cybercrime, software piracy, illegal downloading, hacking, and cyberbullying among others have all become part of our daily lives. This study will focus on downloading and hacking, part of the International Self Report Delinquency (ISRD-2) study, which included 31 countries across four continents. This dataset set was chosen for this study for the following reasons: (1) it offered a large sample of adolescents from various regions of the world; (2) the dataset was unique in its own right, being the only cross-national study that had addressed delinquency and cyberdeviance (downloading and hacking); (3) it included variables that measure self-control theory, peer and family relationships, and school and neighborhood attachment and disorganization, offering a unique chance to test traditional sociological theories.

Both downloading and hacking, each for its own reason, have attracted a lot of attention from researchers and media alike. While the main issue with downloading is copyrights and the

vast amounts of money that music and movie producers don't receive due to sharing (Navarro, Marcum, Higgins et al. 2014), hacking poses a security risk and can be potentially devastating to individuals, companies or countries alike (Nelson 2014). Younger generations have been shown to adopt new technologies faster, leading to the debate of digital natives and digital immigrants (Prensky 2012), which makes adolescents the perfect sample to study the link between technology and behavior.

3.1 Digital Piracy and Downloading

Illegal downloading of software, movies and especially music has become an increasingly contentious issue. Setting aside the moral and legal debate of what pertains lawful and unlawful downloading (for a good discussion see Cluley 2013), a number of studies have tried explain downloading and online piracy. The two most widely used theoretical frameworks are social learning theory and self-control. In support of the social learning perspective Hinduja and Ingram (2009) found that real-life association with deviant peers was the biggest predictor of music piracy, although online peers and online media were also significant factors. Morris and Higgins (2010) employed vignettes and asked their respondents "How likely would it be for you to [go on-line and find a copy of the movie and download it for free, download the CD illegitimately under these circumstances, to have friends ask you to make a copy it]" to measure the possibility of digital piracy. The results indicated at modest support for Aker's social learning theory (Morris and Higgins 2010). Jacobs, Dehue, Vollink et al. (2014) adapted a social cognitive theory model from LaRose and Kim (2007) and tailored it specifically for downloading. The revised model explained 22.7% of variance in downloading behavior with descriptive norms, deficient self-regulation, and five types of outcome expectations as significant predictors. However, self-efficacy and moral justifications did not influence the number of downloads reported by respondents (Jacobs et al. 2014). Lastly, lending credence to the social learning approach, Navarro et al.

(2014) found that associating with deviant peers increased an individual's likelihood of committing software, movie or music piracy.

Research concerning digital piracy and self-control is sparse and oftentimes done in conjunction with the social learning theory. Higgins, Wolfe and Marcum (2008) employed the full scale of self-control, which was developed by Gottfredson and Hirschi (1990). Their dependent variable was "I would go to the web-site with the intention to download the CD under these circumstances", which does not specify if the CD is music, movies, or software (Higgins et al. 2008). In this way the author's encompass all the possible types of digital piracy, but at the same time it is impossible to differentiate between them. In light of the limitations of the study, the authors found that low self-control and especially the impulsivity subscale are significantly associated with the intention of digital piracy. Furthermore, social bonding had a negative relationship with digital piracy, meaning that stronger attachment to one's family and school acts as a deterrent to a certain degree (Higgins et al. 2008). This is in line with Higgins and Wilson (2006) who examined the link between self-control, differential association and software piracy. Their findings supported low self-control and differential association, however the statistical significance was lost in the subsample group with high morals (Higgins and Wilson 2006). Thus one's morals can possibly negate the influence of low self-control or differential association. A more nuanced approach to digital piracy includes both self-control and social learning theory. First, Higgins and Makin (2004a) and Higgins (2005) reported that self-control correlated with software piracy more strongly for those respondents that had associated with more deviant peers already. Second, Higgins and Makin (2004b) expanded on this finding and included attitudes towards software piracy and moral beliefs in their regression analyses. Their conclusions, based on regression analyses, corroborated previous findings on the conditioning effects of social learning theory. This means that self-control becomes less significant for predicting software piracy once one's

daily associates are taken into account. Furthermore, the gender gap (the offenders being overwhelmingly male), that has been consistently found by studies examining such behaviors as hacking or downloading (e.g., Turgeman-Goldschmidt 2008, Young et al. 2007), was partially explained by association with deviant peers (Higgins 2006).

Higgins et al. (2006) took a step further and used structural equation modeling to test how self-control and social learning theories interact in one model. They concluded that a three factor model needs the social learning component for a fuller explanation of digital piracy. A more recent study examining self-control, social learning theory and their links to software piracy revealed that self-control plays a more important role indirectly through social learning, and, when controlling for social learning increased levels of low self-control, likelihood of software piracy went down (Burruss, Bossler and Holt 2012). The debate around Gottfredson and Hirschi's self-control theory and Aker's social learning theory exhibits contradictory results and it is fair to say that both theories offer valid approaches to predicting digital piracy.

Finally, a number of studies have looked at software piracy from a slightly different theoretical point of view. While still measuring the influence of self-control, Higgins (2007) examined rational choice as a possible factor that could explain software piracy. Low self-control proved to be a direct and indirect influence on software piracy, and situational factors derived from the rational choice theory mediated this effect (Higgins 2007). Hinduja (2007) explored techniques of neutralization, which is a theoretical framework originally from delinquency research (Sykes and Matza 1957). Adapting it to 51 items comprised of "Denial of Responsibility," "Denial of Injury," "Denial of Victim," "Condemnation of the Condemners," "Appeal to Higher Loyalties," "Metaphor of the Ledger," "Claim of Normalcy," "Denial of Negative Intent," and "Claim of Relative Acceptability," the study found only weak support for the theory, noting that respondents did not consider software piracy to be something culpable, which could partially explain the poor results (Hinduja

2007). Exploring the deindividuation theory, Hinduja (2008) specifically studied anonymity and pseudonymity, but found no significant difference in software piracy levels between respondents scoring higher or lower on either of the scales.

3.2 Hacking

Originally the word "hacker" had a positive connotation and was attributed to individuals with exceptional skill for being able to find shortcuts or "hacks". Nowadays it has been turned upside down (Seigfried-Spellar and Treadway 2014). Yar (2005) refers to the labeling approach taken by Becker (1963) arguing that it is the governments, law enforcement and media who construct hacking as a criminal activity, and therefore adding the negative connotation to it. To date very few studies have looked specifically at hacking. The most frequently used theory to analyze hacking has been social learning theory (Akers et al. 1979). One of the first studies to explore the link between social learning and hacking was by Skinner and Fream (1997), who found modest support for the theory. Measurement of hacking included several items such as "tried to guess another's password to get into his or her computer account or files," "accessed another's computer account or files without his or her knowledge," and "wrote or used a program that would destroy someone's computerized data (e.g., a virus, logic bomb, or trojan horse)." Differential association and differential reinforcement/punishment were both significant predictors of the aforementioned hacking behaviors (Skinner and Fream 1997). Holt, Burruss and Bossler (2010b) studied the full social learning model using structural equation modeling (SEM) analysis and found that, not only is social learning directly linked to cyberdeviance, it also explains the gender gap. Taking into account the cross-sectional nature of the study, the SEM model explained 81% of the variance in cyberdeviance, which is more than the average usually reported in the field (Holt et al. 2010b). Finally, Holt, Bossler and May (2012) did a similar study using the same measures Skinner and Fream (1997) had used with a sample of middle and high school

students. Their findings confirm that deviant peer associations, as well as lower self-control, were significant predictors of hacking and sharing “pirated” software (Holt et al. 2012).

Besides the social learning theory the next most frequently used theoretical approach is self-control which is most widely used in criminology and part of the general theory of crime (Gottfredson and Hirschi 1990). Bossler and Burruss (2011) used the classic self-control theory developed by Gottfredson and Hirschi to analyze hacking. While some scholars argue that being a hacker means having self-control, discipline and the commitment to learn systematically (Holt and Kilger 2008, Jordan and Taylor 1998), Bossler and Burruss (2011) refer to Gottfredson and Hirschi, contending that most hacking is simple and thus self-control plays an important role. Previous studies have shown that there is no connection between self-control and hacking intentions (Gordon and Ma 2003), however, a growing body of evidence suggests that self-control is in fact related to hacking in a significant way (Bossler and Burruss 2011, Donner et al. 2014, Holt et al. 2012).

Apart from the two aforementioned theories, researchers have linked parent–child relationships and depression (Kong and Lim 2012), willingness to hack (Beebe and Guynes 2006), and risk propensity and rationality (Bachmann 2010) to hacking behavior. In addition, introversion has been associated with hacking and related computer crime activities (Rogers, Seigfried and Tidke 2006b), however others found no such connection (Seigfried-Spellar and Treadway 2014). Seigfried-Spellar and Treadway (2014) suggest that the stereotypical argument about the Net Generation or the digital native hackers being introverted tech geeks has become moot, as everyone growing up now is much closer to technology by default. A qualitative study of 54 self-professed hackers in Israel revealed that hacking for them is a form of entertainment, with the purpose of seeking fun, gaining knowledge, and showing off their skills (Turgeman-Goldschmidt 2005). Moreover, hackers often see themselves as positive deviants and lack shame no matter how serious their offenses are (Turgeman-

Goldschmidt 2008). They also deny their guilt by blaming the victim (Young et al. 2007). Self-proclaimed hackers oftentimes think that the chances of punishment for hacking are smaller than for shoplifting, although the general student population believes in the opposite (Zhang, Young and Prybutok 2008). This could explain their easy-going attitude towards hacking and its possible consequences.

3.3 Purpose of the Study

Based on the results of the previous chapter, this study will test traditional theories of deviant behavior as predictors of cyberdeviance (in this case illegal downloading and hacking). As the overlap between online and offline deviance is partial, it is expected that these theories will provide some explanation for cyberdeviance. However, will these results warrant their continued use in cyberdeviance research, or should we look for new theories? No existing study has looked into the role of family, school and neighborhood at the same time in connection with cyberdeviance. The exceptions that include at least one of the aforementioned factors are Aoyama, Barnard-Brak and Talbert (2011), who examined parental monitoring and found no significant association with cyberbullying, and Kong and Lim (2012) who found that parent–child relationship plays a significant role in cyber delinquency (a scale comprising items that include downloading, hacking, swearing and lying online).

Furthermore, the ISRD-2 dataset includes a number of delinquency items, enabling a follow-up analysis of the online-offline overlap. Do such behaviors as shoplifting, vandalism or selling drugs correlate with hacking and downloading?

Lastly, the utilization of the ISRD-2 data will give an unparalleled opportunity to examine cyberdeviance across various regions and countries around the world. Previous studies that have examined downloading and hacking have mostly employed small college student

samples in one country. There is a dearth of knowledge when it comes to cross-national comparisons and more representative samples. Do adolescents differ in their engagement in cyberdeviance around the world? Can the theories explain variance in engagement? Are adolescents in some countries more prone to cyberdeviance?

3.4 Methods

3.4.1 Participants

The 2005–2007 ISRD-2 study participants were 68,507 students from 30 countries: 34,583 females (50.5%), 33,758 males (49.3%), and 166 not specified (0.2%). The distribution between grades was 22,631 in Grade 7 (33.0%), 22,715 in Grade 8 (33.2%) and 23,161 in Grade 9 (33.8%). Originally there were 31 participant countries, but Canada was excluded from the final sample due to internal data protection policies (Marshall and Enzmann 2012). Countries were subdivided into clusters depending on geographical and cultural factors (see Esping-Andersen (1990) and Saint-Arnaud and Bernard (2003)). The Anglo-Saxon cluster includes the USA and Ireland. The Northern Europe cluster is represented by Iceland, Finland, Sweden, Norway, and Denmark. The Western Europe cluster refers to Netherlands, Austria, Germany, Switzerland, France, and Belgium. The Mediterranean cluster is represented by Portugal, Cyprus, Italy, and Spain. The Latin-American cluster is represented by Suriname, and Venezuela. Lastly, the Post-Socialist cluster consists of Estonia, Lithuania, Poland, Czech Republic, Hungary, Slovenia, Bosnia and Herzegovina, Russia, and Armenia (Marshall and Enzmann 2012).

3.4.2 Measures

The ISRD-2 study included a variety of scales and measures taken from fields such as criminology, sociology, and psychology. While the survey included separate measures for age and grade, this study will use the student's grade as a proxy for age. A problem arises

because of students' repetition of the same grade, confounding the issue and making analysis more complicated. Grade was coded as 1=grade seven, 2=grade eight and 3=grade nine. Gender was coded as 1=female and 2=male. The last covariate item was computer availability at home which was coded as 1=no computer at home to use and 2=computer at home to use.

Variables concerning family inquired about relationships with parents (or guardians), the quality of leisure time spent together, as well as the number of times dinner is consumed together. Items asking about family included relationships with the man or woman (e.g., "How do you usually get along with the man you live with (father, stepfather....)?") The coded responses were 1= "I don't get along at all," 2= "I don't get along so well," 3= "I get along rather well," and 4= "I get along just fine." Family leisure was measured by one item: "How often do you and your parents (or the adults you live with) do something together, such as going to the movies, going for a walk or hike, visiting relatives, attending a sporting event, and things like that?" which was 1= "Almost never," 2= "About once a year," 3= "A few times a year," 4= "About once a month," 5= "About once a week," and 6= "More than once a week." Next, an item eating dinner together ("How many days a week do you usually eat the evening meal with (one of) your parents (or the adults you live with)?") was coded as follows: 1= "Never," 2= "Once," 3= "Twice," 4= "Three times," 5= "Four times," 6= "Five times," 7= "Six times," 8= "Daily." The last variable concerning family inquired about parents knowing the respondents' friends ("Do your parents (or the adults you live with) usually know who you are with when you go out?"). The responses were coded as follows: 1= "Rarely/never," 2= "Sometimes," 3= "Always."

Other measures include the 5 item attitudes towards violence scale (Wilmers, Enzmann, Schaefer et al. 2002) comprised of the following items: "A bit of violence is part of the fun." "One needs to make use of force to be respected." "If somebody attacks me, I will hit him/her

back." "Without violence everything would be much more boring." "It is completely normal that boys want to prove themselves in physical fights with others." Scale description: scores 5–20; Cronbach's α=.70; M=5.05; SD=3.34.

Next, a shortened 12 item self-control scale was employed (Grasmick, Tittle, Bursik et al. 1993). The self-control scale was comprised of four subscales: impulsivity (3 items: "I act on the spur of the moment without stopping to think." "I do whatever brings me pleasure here and now, even at the cost of some distant goal." "I'm more concerned with what happens to me in the short run than in the long run"); risk-taking (3 items: "I like to test myself every now and then by doing something a little risky." "Sometimes I will take a risk just for the fun of it." "Excitement and adventure are more important to me than security"); self-centeredness (3 items: "I try to look out for myself first, even if it means making things difficult for other people." "If things I do upset people, it's their problem not mine." "I will try to get the things I want even when I know it's causing problems for other people"); and volatile temperament (3 items: "I lose my temper pretty easily." "When I'm really angry, other people better stay away from me." "When I have a serious disagreement with someone, it's usually hard for me to talk calmly about it without getting upset.") Scale description: scores 12–48; Cronbach's α=.83; M=26.00; SD=7.29.

The 8 item school scale was comprised of two subscales: school attachment (4 items: "If I had to move I would miss my school." "Teachers do notice when I am doing well and let me know." "I like my school." "There are other activities in school besides lessons (sports, music, theatre, disco's)") and school disorganization (4 items: "There is a lot of stealing in my school." "There is a lot of fighting in my school." "Many things are broken or vandalized in my school." "There is a lot of drug use in my school.") Scale descriptions as follows: school attachment: scores 4–16; Cronbach's α=.61; M=12.28; SD=2.69 and school disorganization: scores 4–16; Cronbach's α=.75; M=8.56; SD=3.02.

The 10 item neighborhood scale (adapted from Sampson, Raudenbush and Earls (1997) and Sampson, Morenoff and Earls (1999)) consisted of three subscales: neighborhood attachment (2 items: “If I had to move, I would miss the neighborhood” and “I like my neighborhood”); neighborhood disorganization (5 items: “There is a lot of crime in my neighborhood.” “There is a lot of drug selling.” “There is a lot of fighting.” “There are a lot of empty and abandoned buildings.” “There is a lot of graffiti”); and neighborhood integration (3 items: “This is a close-knit neighborhood.” “People in this neighborhood can be trusted.” “People in this neighborhood generally don’t get along with each other.”) Three items from the full neighborhood scale were not included in the analysis based on previous findings from this dataset (Marshall and Enzmann 2012:55). Scale descriptions as follows: neighborhood attachment: scores 2–8; Cronbach’s α=.76; M=6.48; SD=1.77; neighborhood disorganization: scores 5–20; Cronbach’s α=.82; M=8.21; SD=3.59; and neighborhood integration: scores 3–12; Cronbach’s α=.82; M=8.55; SD=2.55.

The responses for all scales ranged from “Fully disagree,” “Somewhat disagree” to “Somewhat agree” and “Fully agree” (coded as 1 – Fully disagree to 4 – Fully agree that were then summed up for scale values). The ISRD-2 study asked about hacking and downloading generally, and followed up with a second dichotomous response inquiring about the last 12 months. This study looked at only those who responded affirmatively to the second question (coded as 1=experience), while the rest were coded as 0=no experience. The corresponding questions for the items were “When you use a computer did you ever download music or films?” and “Did you ever use your computer for ‘hacking’?”

3.4.3 Procedure

The dataset for this study was acquired from Inter-university Consortium for Political and Social Research data archive.

3.4.4 Data analyses

Logistic regression was chosen as the method most fit to analyze the dichotomous dependent variables measuring downloading and hacking experience (Menard, 2002). All the items in the model were tested for multicollinearity and were deemed appropriate for analysis. Gender, grade and the availability of a computer at home were added as covariates in the models. All analyses were conducted in R (ver. 3.2.1). Regressions were conducted using the "glm" function in R. The significance level was set at $p<0.05$.

3.5 Results

3.5.1 Frequencies

The overall illegal downloads rate across all countries stood at 47.47%, while hacking perpetration was 5.38 percent. A crosstab analysis of having a computer to use and illegal downloads showed that the relationship between the variables is significant ($p<.001$), but not very strong (Phi-Coefficient=.254; see Table 5). This result suggests that not having access to a personal computer at home greatly reduced the risk of illegal downloading. However, the results for those who had access to a personal computer at home were less pronounced, and the difference in cyberdeviance was much smaller with offenders being slightly numerous. An examination computer availability and hacking showed that the relationship is significant ($p<.001$), but very weak (Phi-Coefficient=.061). However, it is apparent from this analysis that very few respondents who had no computer at home engaged in hacking. As it is a skill that takes certain knowledge and practice, it would be very difficult acquire the necessary traits without having spent a long time in front of the computer screen. Furthermore, schools are likely to restrict the use of their computers in order to prevent exactly such incidents so the students, who would be interested in engaging or learning about hacking, face numerous obstacles.

Table 5. Crosstab analysis of computer access, illegal downloads, and hacking.

	Access to a PC at home	
Illegal downloads	No	Yes
No	8,512 (12.89%)	26,156 (39.62%)
Yes	1,891 (2.86%)	29,464 (44.63%)
Hacking		
No	10,236 (15.40%)	52,680 (79.23%)
Yes	231 (.35%)	3339 (5.02%)

Illegal downloads: N=66,023, chi-square=4,255; Hacking: N=66,486, chi-square=244.53

A comparison of all the delinquency items showed that the vast majority of those who engage in offline deviant behavior have also engaged in cyberdeviance. Analysis comparing country groups showed that different regions of the world exhibit varying degrees of perpetration rates for downloading – Anglo-Saxon 49.95%, Northern EU 59.85%, Western EU 52.33%, Mediterranean EU 37.94%, Latin America 31.56%, Post Socialist 49.44%. The differences were even more pronounced for hacking: Anglo-Saxon 3.29%, Northern EU 3.91%, Western EU 5.25%, Mediterranean EU 8.69%, Latin America 3.97%, Post Socialist 4.95%. The group differences for both downloading and hacking were significant ($p<.001$). The frequency rates for last 12 months for all the other delinquency items are as follows: vandalism=7.2%; shoplifting=6.0%; burglary=0.9%; stealing (bicycle and/or scooter)=1.8%; stealing (motorbike and/or car)=0.6%; stealing (from a car)=1.1%; snatch purse/bag etc.=1.2%; carry weapon=7.1%; extortion=1.2%; group fighting=11.1%; assault=1.7%; sell drugs=1.8%.

3.5.2 Correlations

Downloading and hacking were both significantly correlated with all the other deviant behavior items, as well as the three covariates. However, the effect size varied greatly from item to item (see Table 6). The correlation between hacking and downloading was only moderate (Pearson's r=.193) which shows that the two behaviors do not necessarily conflate. Hacking was more strongly correlated with all the other delinquency items than downloading,

the only exception being shoplifting. One reason for this could be that only 34% of those who admitted to ever downloading music or movies thought it was illegal. Unfortunately the same question was not employed for hacking, thus making a direct comparison impossible.

Interestingly, having a computer at home was much more strongly correlated to downloading (Pearson's r=.254), while the effect size for hacking was more than four times smaller (Pearson's r=.061). Thus, hacking is not exclusively tied to the image of the lone hacker at home at his personal computer. Furthermore, computers at schools usually prohibit downloading and are restricted in other ways, but hacking in itself is breaking the prescribed rules, which might indicate why downloading would correlate more with having a computer at home while hacking is not.

Table 6. Deviant behavior correlations.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Gender	-	-.013	.034	.110	.033	.059	.085	.054	.060	.042	.157	.055	.164	.071	.054	.107	.127
2. Grade		-	.043	.036	.039	.025	.035	.026	.025	.024	.050	.019	.034	.014	.065	.148	.046
3. Computer at home			-	.032	.027	.004^{N}	.018	-.002^{N}	-.003^{N}	.007†	.022	.001^{N}	.010	.010††	.018	.254	.061
4. Vandalism				-	.299	.212	.269	.169	.229	.208	.322	.214	.316	.208	.207	.159	.166
5. Shoplifting					-	.220	.238	.137	.206	.216	.209	.161	.203	.144	.184	.130	.104
6. Burglary						-	.283	.303	.266	.237	.185	.221	.141	.178	.193	.049	.094
7. Stealing (bicycle/scooter)							-	.301	.263	.242	.226	.235	.203	.209	.235	.085	.094
8. Stealing (motorbike/car)								-	.310	.219	.174	.221	.129	.207	.201	.042	.095
9. Stealing (from a car)									-	.250	.199	.212	.171	.169	.229	.062	.100
10. Snatch purse/bag etc.										-	.176	.243	.159	.178	.215	.062	.097
11. Carry weapon											-	.229	.317	.244	.247	.165	.170
12. Extortion												-	.189	.257	.230	.064	.103
13. Group fighting													-	.249	.197	.166	.176
14. Assault														-	.214	.067	.108
15. Sell drugs															-	.091	.130
16. Downloading																-	.193
17. Hacking																	-

Two-tailed Pearson's Correlations. All correlations in the table are significant at $p<.001$, except between gender and grade ($p<.01$) and computer availability at home where marked otherwise: †p=.062; ††p=.012; ^{N}p=Non-significant.

3.5.3 Psychological and social factors as predictors of cyberdeviance

To examine the influence of individual and social factors predicting downloading and hacking behavior multiple regressions analyses were used. Models one through four were created using binomial logistic regression and focused on downloading. Gender, grade and

computer availability at home were used as control variables. Model 1 (see Table 7) represents the individual level measuring attitudes towards violence and self-control. All the variables in Model 1 were significant predictors of downloading. Having a computer at home was associated with more than five times (OR=5.05–5.67) more frequent downloading in the past year. Likewise, boys (OR=1.37–1.47) and students in higher grades or classes (OR=1.39–1.45) were more likely to download music and movies. The influence of attitudes towards violent behavior (OR=1.02–1.04) and self-control (OR=1.04–1.05) was small, but, nevertheless, significant.

Model 2 examined all the previous variables while adding family level items in the regression. Not getting along with either parent (father: OR=.91–.97; mother: OR=.92–.99) and less frequent dining together with parents (OR=.95–.97) were negatively and significantly associated with downloading. By far the most significant predictor among the family variables was parents knowing whom the adolescent is with when going out, which was negatively and significantly associated with downloading (OR=.70–.74).

Model 3 introduced school level variables, which in this case were school attachment and disorganization. All the variables from previous models retained their significance, except for family leisure. Both school variables were significantly associated with downloading, but the odds ratios were very small (school attachment: OR=.96–.98; school disorganization: OR=1.01–1.02). Model 4 introduced the last batch of variables, adding neighborhood to the equation. Again, all the variables from previous models, except family leisure, retained their significance. Neighborhood attachment was positively and significantly (OR=1.03–1.05), while neighborhood integration was negatively and significantly associated with downloading (OR=.96–.98).

Hacking perpetration rates were much lower than downloading rates. Models five through eight focused on predicting hacking. Model 5 employed the same independent variables as Model 1, in this case, predicting hacking. All the variables were positively and significantly associated with hacking. As with downloading, having a computer at home was the strongest predictor with hacking (OR=2.63–3.59). Similarly, as with downloading, boys (OR=2.70–3.21) and students in higher grades (OR=1.20–1.32) were more likely to engage in hacking. Scales measuring attitudes towards violence (OR=1.04–1.07) and self-control (OR=1.05–1.06) showed only a slight, albeit significant, effect on hacking.

Table 7. Multiple logistic regression analysis predicting illegal downloading.

	Model 1		Model 2		Model 3		Model 4	
	B (S.E.)	Odds ratio (CI)	B (S.E.)	Odds ratio (CI)	B (S.E.)	Odds ratio (CI)	B (S.E.)	Odds ratio (CI)
Gender	.35 (.018)	1.42***	.37 (.020)	1.44***	.36 (.021)	1.43***	.38 (.021)	1.46***
Grade	.35 (.011)	1.42***	.32 (.012)	1.38***	.32 (.012)	1.37***	.32 (.013)	1.38***
Computer at home	1.68 (.029)	5.35***	1.69 (.033)	5.40***	1.68 (.034)	5.37***	1.70 (.036)	5.49***
Attitudes towards violence	.03 (.003)	1.03***	.02 (.004)	1.02***	.02 (.004)	1.02***	.02 (.004)	1.02***
Self-control	.04 (.002)	1.04***	.03 (.002)	1.03***	.03 (.002)	1.03***	.03 (.002)	1.03***
Get along with father			-.06 (.017)	.94***	-.05 (.018)	.95**	-.05 (.019)	.95**
Get along with mother			-.05 (.020)	.95*	-.05 (.020)	.94*	-.05 (.021)	.95*
Family leisure			.00 (.008)	1.00	.01 (.008)	1.01	.01 (.008)	1.01
Eat dinner together			-.04 (.005)	.96***	-.04 (.005)	.96***	-.03 (.005)	.97***
Parents know friends			-.34 (.018)	.71***	-.31 (.018)	.73***	-.31 (.019)	.73***
School attachment					-.03 (.004)	.97***	-.03 (.004)	.97***
School disorganization					.01 (.004)	1.01**	.01 (.004)	1.01**
Neighborhood attachment							.04 (.007)	1.04***
Neighborhood disorganization							-.00 (.003)	1.00
Neighborhood integration							-.03 (.005)	.97***
AIC	72843		62448		58124		54881	
Adjusted McFadden R^2	.091		.096		.099		.100	
N	57833		49865		46534		43998	

*p<.05; ***p*<.01; ****p*<.001.

Model 6 introduced family variables and, again, family leisure was the only non-significant variable in the model. As with downloading, again not getting along with father (OR=.83–.94) or mother (OR=.71–.81) were indicators for increased hacking behavior. Model 7 showed that the influence of school is rather small but significant: school attachment (OR=.94–.97) was negatively and significantly associated with hacking and school

disorganization (OR=1.04–1.07) was positively and significantly associated with hacking. Model 8 included the neighborhood scales. Contrary to Model 4, this time neighborhood disorganization was the only significant predictor of hacking (OR=1.02–1.05), while neighborhood attachment and integration were non-significant.

Table 8. Multiple logistic regression analysis predicting hacking.

	Model 5		Model 6		Model 7		Model 8	
	B (S.E.)	Odds ratio (CI)	B (S.E.)	Odds ratio (CI)	B (S.E.)	Odds ratio (CI)	B (S.E.)	Odds ratio (CI)
Gender	1.08 (.044)	2.95***	1.14 (.048)	3.16***	1.12 (.049)	3.07***	1.13 (.051)	3.10***
Grade	.23 (.023)	1.26***	.21 (.025)	1.23***	.20 (.026)	1.22***	.19 (.027)	1.21***
Computer at home	1.12 (.080)	3.08***	1.20 (.090)	3.32***	1.15 (.091)	3.16***	1.21 (.096)	3.34***
Attitudes towards violence	.05 (.007)	1.05***	.05 (.007)	1.05***	.04 (.007)	1.04***	.04 (.008)	1.04***
Self-control	.05 (.003)	1.06***	.05 (.003)	1.05***	.04 (.004)	1.04***	.04 (.003)	1.04***
Get along with father			-.13 (.032)	.88***	-.11 (.033)	.89***	-.10 (.034)	.90**
Get along with mother			-.28 (.034)	.76***	-.26 (.036)	.77***	-.26 (.037)	.77***
Family leisure			-.00 (.015)	1.00	.01 (.016)	1.01	.01 (.016)	1.01
Eat dinner together			.03 (.009)	1.03**	.03 (.010)	1.03***	.04 (.010)	1.04***
Parents know friends			-.31 (.033)	.73***	-.27 (.034)	.76***	-.26 (.035)	.77***
School attachment					-.04 (.008)	.96***	-.04 (.008)	.96***
School disorganization					.05 (.007)	1.05***	.04 (.008)	1.04***
Neighborhood attachment							-.01 (.013)	.99
Neighborhood disorganization							.03 (.006)	1.04***
Neighborhood integration							.00 (.010)	1.00
AIC	22221		19290		18035		17064	
Adjusted McFadden R^2	.092		.105		.108		.110	
N	58186		50173		46804		44247	

*p<.05; ***p*<.01; ****p*<.001.

Separate analyses with the offline delinquency items showed that the same models explained more variance in the dependent variable, i.e., family, school, and neighborhood variables were better at predicting offline deviance than online deviance. Regression models, with the same independent variables as in Model 8, were used in this case. The adjusted McFadden R^2 scores were: vandalism =.19; shoplifting =.13; burglary =.19; stealing (bicycle and/or scooter) =.19; stealing (motorbike and/or car) =.25; stealing (from a car) =.20; snatch purse/bag etc. =.17; carry weapon =.19; extortion =.22; group fighting =.18; assault =.20; sell drugs =.21. Males were more likely to be involved in all of the above mentioned delinquent acts except for shoplifting, where gender was not a significant predictor in the model.

Finally, dummy variables were created for countries and used as the only independent variables in the same model to determine how much variance is explained between and within countries. In the case of downloading, 8% (adjusted McFadden R^2=.08) of the variance is between the countries, while 92% of the variance is within the countries. For hacking these numbers are 3% (adjusted McFadden R^2=.03) and 97 percent. This shows that country origin is unimportant and most variance in cyberdeviance is explained by the factors within the countries themselves.

3.6 Discussion

As the spread of technology and the Internet increases, we can expect more and more issues to arise concerning cyberdeviance. One of the key findings in this study is that cyberdeviance does not significantly vary across the 30 participant countries. Country origin explained only 8% of variance in downloading and 3% in hacking. While computer access rates across the countries might vary greatly, just being a citizen of a certain country does not automatically raise one's chances of engaging in cyberdeviance. Furthermore, this is clear evidence, which lends support to the use of combined cross-national samples for the purpose of studying cyberdeviance. Thus, the theories that are going to be discussed here should apply to all the participant countries separately, and regardless of the culture.

This study showed that family, school and neighborhood play differing but significant roles in online deviant behavior. Examining the correlations among all the delinquency items, downloading and hacking, we can see that hacking is more strongly correlated to the other delinquency items than downloading, with the exception of shoplifting. This supports the findings from Study One. Yar (2005) argued that the hacking culture itself encourages males to join and purposefully excludes females. Like Yar, this study found that hacking is overwhelmingly male – 8.29% versus 2.58% of females. In comparison, when it comes to

downloading, the gender distribution is more even – 54.60% of males versus 42.24% of females. These results are consistent with previous studies that show a much larger gender gap for hacking (Turgeman-Goldschmidt 2008) than for downloading (Gunter et al. 2010). This gender gap could explain why hacking is more strongly correlated with other delinquency items which are predominantly male domains (Cornell and Loper 1998).

The biggest predictor for both downloading and hacking was computer availability at home, which suggests that affordability plays an important role. Because schools might monitor more closely what is happening on their computers, and possibly employ filters, it puts more constraints on how they can be used. This in turn makes it harder to even try downloading illegal software. Furthermore, being caught in any of these acts could spell expulsion from school, or at least a disciplinary case.

Next, gender and grade were significant predictors of both downloading and hacking. For downloading, males were up to 1.46 times more likely to be perpetrators; however, for hacking, the difference was much more pronounced: up to 2.85 times more likely than females. Having a positive attitude towards violent behavior was a significant predictor of both downloading and hacking. Positive attitudes towards violent behavior have already been linked to physical and verbal violence (Avci and GÜÇRay 2013, Huesmann and Guerra 1997, McConville and Cornell 2003), or other types of high-risk behavior, such as fighting, substance use, and carrying weapons, where males were found to be the more frequent perpetrators (Cornell and Loper 1998).

Although the odds ratio for self-control as a predictor for downloading and hacking was small, nonetheless it was significant in all the regression models, adding to the already large body of evidence that links low self-control and online deviant behavior (Bossler and Burruss 2011,

Gunter et al. 2010, Higgins and Makin 2004a, Higgins et al. 2006, Higgins 2007, Holt et al. 2012).

Parental attachment in this study was measured separately for father and mother to see if there are any differences and gain deeper insight in parental relationships in connection with deviant behavior. Even though both items were significant predictors for downloading and hacking, the odds ratios were not the same. Having a bad relationship with mother or father had almost identical negative associations with downloading. In contrast, the odds ratio for getting along with mother was twice the size of getting along with father in the regression models predicting hacking. In this case the relationship with mother seems to play a more important role. This contradicts previous studies that have shown the father-child relationship being more important (Day and Padilla-Walker 2009, Williams and Kelly 2005) or equal in measure (Hirschi 1969:102) to the mother-child relationship in relation to delinquent or externalizing problem behavior.

Family leisure was not a significant predictor of either downloading or hacking, but eating dinner together was. Eating dinner together was negatively associated with downloading. In contrast, the opposite was true for hacking. Griffin, Botvin, Scheier et al. (2000) have shown that for adolescents from single-parent families and in female respondents eating family dinners together was negatively associated with delinquency. Other studies have linked regular family meals to decreased aggressive and/or violent behavior (Fulkerson, Story, Mellin et al. 2006), tobacco smoking (Wada and Fukui 1994), and for marijuana use in girls (Eisenberg, Olson, Neumark-Sztainer et al. 2004, Sen 2010). Moreover, regular dinners with family also lower the possibility for sex before the age of 16 in boys (Ikramullah and Cui 2009). A more recent longitudinal study by Musick and Meier (2012) reported similar results, but reduced odds of delinquent behavior via more frequent family dinners were only found at

Time 1, and, that significant result disappeared when the researchers tried to model delinquent behavior from Time 1 to Time 2 in their study.

Parental control, or in this case parents knowing the respondents' friends, was a significant predictor of both downloading and hacking. This study supports the view that parental monitoring and control is an important deterrent to deviant behavior (Barnes, Hoffman, Welte et al. 2006, Herrenkohl, Maguin, Hill et al. 2000, Knoester and Haynie 2005, Osgood, Wilson, O'Malley et al. 1996, Osgood and Anderson 2004). Furthermore, effective parenting has been shown to foster higher levels of self-control (Crosswhite and Kerpelman 2012), which, in turn, could theoretically reduce the chance of downloading and hacking due to low self-control.

School attachment or bonding was significantly and negatively associated with both downloading and hacking. A number of studies have shown that increased attachment to school promotes conforming behavior (Cernkovich and Giordano 1992, Herrenkohl et al. 2000), while lower school attachment has been linked to bullying (Spriggs, Iannotti, Nansel et al. 2007), later initiation to deviant behaviors, such as drinking and smoking (Dornbusch, Erickson, Laird et al. 2001), deviance and delinquency (Vazsonyi and Pickering 2003, Wiatrowski, Griswold and Roberts 1981), and cyber-victimization (Schneider, O'Donnell, Stueve et al. 2012).

School disorganization was positively associated with downloading and hacking. This link might seem less obvious, however, disorganization at schools has already been linked to other deviant behaviors, such as bullying (Bradshaw, Sawyer and O'Brennan 2009, Khoury-Kassabri, Benbenishty, Astor et al. 2004), and an increased risk for violence at school (Birnbaum, Lytle, Hannan et al. 2003, Stewart 2003).

The neighborhood variables showed mixed results. Neighborhood disorganization was not significant in the regression models examining downloading. On the other hand, neighborhood integration was significantly and negatively associated with downloading. Surprisingly, neighborhood attachment was a positive and significant predictor of downloading. It is difficult to say why neighborhood attachment is positively associated with downloading, as no other study has examined this connection before. A separate crosstab analysis revealed that there is a similar increase of those with and without downloading experience in tandem with increasing neighborhood attachment scores. Thus, this positive association is partially a statistical artefact of regression analysis. Having said that, if neighborhood attachment can be interpreted as one's attachment to a good, organized or a well-off neighborhood, which would be the antithesis of social disorganization, i.e., neighborhoods that have been associated with community problems in general, poverty and deviant behavior (Haynie, Silver and Teasdale 2006, Shaw and McKay 1942, Wilson and Kelling 1982), it is possible that affordability and socioeconomic status are the factors to be taken into account. Research has shown that middle-class children access the internet more often (Livingstone and Helsper 2007), thus one could argue that there is a connection between more frequent downloading, better neighborhoods and neighborhood attachment.

For hacking, neighborhood attachment and integration didn't show any significance, but neighborhood disorganization was a significant predictor. No other study has analyzed neighborhood disorganization and hacking behavior, thus further research is needed to corroborate these findings. Is it because socially disorganized neighborhoods exhibit more crime in general or there are some other factors in play here? Overall, these results indicate that neighborhood plays differing roles for hacking and downloading, although there are still many unanswered questions.

The regression models with all of the individual, family, school and neighborhood variables explained only 10% and 11% of variance for downloading and hacking perpetration respectively. These numbers were lower than all of the same models with other delinquency items as dependent variables ranging between 13% and 25%. The data suggest that when it comes to cyberdeviance, the established sociological and criminological theories explain some of the perpetration, but their use is limited, corroborating the conclusions based on the literature review in Chapter One. Furthermore, this study strengthens the findings from Study One, which already confirmed that there is only a partial overlap of online and offline deviance. Taking these findings into account, it is only logical that the explanatory powers of traditional theories will be limited when applied to cyberspace.

In light of these findings, there is enough evidence to support the development of new theories and measures that would account for this unexplained variance in cyberdeviance. Various theories of crime and deviance in cyberspace have already shed some light on the issue (Jaishankar 2008, Suler 2004). Previous studies have shown how particular aspects of the Internet influence deviant behavior in cyberspace (Berson and Berson 2005, Görzig and Ólafsson 2013, Lapidot-Lefler and Barak 2012, Sproull and Kiesler 1986). It is clear that there are certain aspects that set online behavior apart. However, the findings from this study indicate that we should not completely forget the established criminological and sociological theories when it comes to the Internet. While exploring new theoretical perspectives, future studies should try to incorporate some of the traditional factors as well in order to gain a fuller understanding. Which online or offline factors influence particular behaviors in cyberspace? Is it the same for trolling, digital piracy or cyberbullying? The range of possible online misbehaviors and deviance is relatively large and, although including all of the possible measures in one study might be difficult, it could shed some light on some of these issues.

3.7 Limitations

First, the basic limitation of this study is that it only measures downloading and hacking, thus other online deviant behaviors, for example, cyberbullying cannot be examined. Second, each country participating in the ISRD-2 study did their own data sampling and gathering, therefore inconsistencies and comparison errors are likely. Third, the questionnaire was developed in English and then translated to each of the other languages, and then again back translated. While this is the best approach available, cultural differences as well as different meanings for the same word, or non-existence of the same concept in other languages complicates comparison. Fourth, the survey data is cross-sectional and should be treated as such. Longitudinal research is necessary to corroborate the findings from this study.

3.8 Summary

This chapter investigated the applicability of traditional sociological theories of deviant behavior for the study of cyberdeviance. Among the various dimensions of cyberdeviance, two have garnered the most attention from researchers and the media: illegal downloading and hacking. Most studies in sociology and criminology on illegal downloading or hacking have focused on college samples and have been confined to a single city or country. Utilizing data from the second International Self-Report Delinquency Study (ISRD-2), this chapter analyzed illegal downloading and hacking perpetration rates among adolescents from 30 countries around the world. Deviant behavior, in this case hacking and downloading, was at similar levels across the various regions of the world, and most of the variance was explained within the countries. Using gender, grade (proxy for age) and access to a computer at home as covariates, the study analyzed parental control, attachment to family (relationships, family leisure and eating dinner together), self-control, attitudes towards violence, school (attachment and disorganization), and neighborhood (attachment, integration, and

disorganization) as possible predictors of illegal downloading and hacking. Regression analyses revealed that all of the independent variables, except family leisure, were significantly associated with either illegal downloading or hacking. Traditional sociological theories performed better when predicting delinquency than when predicting cyberdeviance. In light of the findings of a partial online–offline overlap in this study, as well as Study One, the conclusion draws attention to the unique nature of cyberspace and why some traditional theories might be lacking, when it comes to explaining and analyzing cyberdeviance. Thus, a need to develop measures specifically designed to address cyberdeviance is recognized.

CHAPTER FOUR – THE DEVELOPMENT OF THE ONLINE DISINHIBITION SCALE (STUDY THREE AND STUDY FOUR) *

The purpose of this chapter is to address the lack of a comprehensive scale tailored to the study of cyberdeviance. Previously Study One and Study Two showed that the online–offline overlap is only partial and Study Two confirmed that traditional theories can predict cyberdeviance, although these approaches have limitations. Most sociological and criminological theories (e.g., social learning) were developed before the rise of the Internet. Online communication is inherently different from face-to-face interaction. Factors such as anonymity and asynchronicity affect the way we communicate and conduct ourselves in cyberspace. This chapter will focus on developing a scale to measure online disinhibition (Suler 2004), a theory that combines the various disinhibiting dimensions of cyberspace. Cyberbullying is chosen as the dependent variable, because it involves various modes of online communication and peer relationships.

4.1 Part 1: Exploring Online Disinhibition Theory: The Case of Cyberbullying (Study Three)

Cyberbullying is increasingly identified with problematic social and psychological outcomes for children and adults alike. It is defined as intentional and repetitive harmful behavior through the use of information and communication technologies (Hinduja and Patchin 2009, Smith, Mahdavi, Carvalho et al. 2008). In recent years some researchers have questioned the aspect of repetitiveness in cyberbullying due to the structure of the Internet that enables instant dissemination of data and infinitely large audiences once the information is online (Dooley, Pyżalski and Cross 2009, Law, Shapka, Hymel et al. 2012, Vandebosch and Van Cleemput 2008).

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*An earlier version of Study Three was published as Udris, Reinis. 2014. "Cyberbullying among high school students in Japan: Development and validation of the Online Disinhibition Scale." *Computers in Human Behavior* 41:253-61. doi: 10.1016/j.chb.2014.09.036.

Research shows that up to 70% of children have experienced cyberbullying (Mora-Merchan, Del Rey and Jager 2010:274). Youth who reported being cyberbullied have been shown to suffer from depression (Baker and Tanrıkulu 2010, Wang, Nansel and Iannotti 2011), academic problems (Beran and Li 2007), decreased self-esteem (Tynes, Rose and Williams 2010), and suicidal thoughts (Hinduja and Patchin 2010). These negative effects are congruent with findings from decades of research on traditional bullying among adolescents, which has been associated with depression and suicidal ideation (Klomek, Sourander, Kumpulainen et al. 2008), poorer grades at school (Juvonen, Wang and Espinoza 2010), disciplinary problems and truancy (Gastic 2008) among others. Bullied youth are also more likely to experience post-traumatic stress disorder (Tehrani 2004) and commit crime later in life (Olweus 2011). Compared to traditional bullying, cyberbullying differs in three ways. First, cyberspace enables anonymity for the aggressors. Second, cyberspace is like a stage visible to the whole world. Anybody can become a spectator. Thus, the audience is infinite. Third, the 24/7 ubiquity of the Internet makes it hard to avoid cyberbullying (Hinduja and Patchin 2009:20-25).

4.2 Explaining Cyberbullying

Some studies have found simple motives for cyberbullying. Hinduja and Patchin (2009) report that the most common reason for cyberbullying is “to get revenge” (p. 72), while other studies using self-reports identify perpetrators just having fun as the most prevalent reason (Mishna, Cook, Gadalla et al. 2010, Raskauskas and Stoltz 2007). Other researchers have used the theory of planned behavior (Li 2005) and the routine activities theory (Navarro and Jasinski 2012) as frameworks to better understand the phenomenon. The theory of planned behavior explains intention and behavior based on the subject’s attitude towards that particular behavior, subjective norms, and perceived behavioral control. On the other hand, the routine activities theory focuses on the motivation and prevention dimensions: it explains

behavior based on the three concepts of a motivated offender, a suitable target, and the absence of capable guardianship.

Ang and colleagues found that narcissistic exploitativeness and normative beliefs about aggression are significantly associated with cyberbullying (Ang, Tan and Talib Mansor 2011). Narcissistic exploitativeness is a subscale of the Narcissistic Personality Questionnaire for Children–Revised measure, which focuses on an individual's ability to persuade and influence others (e.g., "I am good at getting people to do things my way"). Normative Beliefs About Aggression Scale is a 20 item scale (e.g., "It is usually OK to push or shove people around if you are mad") that Ang et al. (2011) used to assess the children's attitudes towards aggression.

Others link moral disengagement to cyberbullying (Pornari and Wood 2010, Renati, Berrone and Zanetti 2012), although the findings are mixed and some studies did not find a significant correlation (Bauman and Pero 2011, Perren and Gutzwiller-Helfenfinger 2012). The theory behind moral disengagement is based on eight mechanisms: moral justification, euphemistic labeling, advantageous comparison, distortion of consequences, dehumanization, attribution of blame, displacement of responsibility, and diffusion of responsibility. All of these mechanisms work to re-frame the unacceptable action into one that is morally accepted by the perpetrator (Bandura, Barbaranelli, Caprara et al. 1996).

All of the aforementioned studies have focused on the individual, excluding the direct influence of technology, which could act as a mediating factor in cyberbullying. One the best known and researched aspects of technology – anonymity – has been linked to greater disinhibition regarding self-disclosure (Joinson 2001), as well as aggressive posts in online forums (Moore, Nakano, Enomoto et al. 2012) and deviant behavior online (Suler and Phillips 1998). Combining all the aspects of technology, one possible way that it affects

cyberbullying is through online disinhibition, but very few studies have tried to look at separate aspects of online disinhibition. Furthermore, to date no instrument or scale exists that could be utilized to measure online disinhibition. The purpose of this study is to address this gap of knowledge with a specific focus on cyberbullying.

4.2 Online Disinhibition

Joinson first described "disinhibition" as lack of inhibition or a type of behavior that is not constrained or restrained, implying a reduction in concerns for self-representation and the judgment of others (Joinson 1998). Suler (2004) distinguished two types of disinhibition: one that promotes openness, kindness and generosity, which he called benign disinhibition, and a second one that involves rude language, hatred and threats, which he referred to as toxic disinhibition. He did, however, acknowledge the ambiguity between the two factors makes overlap in some cases very likely. An example of benign disinhibition could be a person for whom real life conversation can be straining or overpowering, but who feels comfortable sharing thoughts and emotions in the online world. On the other hand, toxic disinhibition could influence someone to insult or ridicule others over the Internet, because of the perceived lack of repercussions and/or anonymity. It has been demonstrated that people tend to be more frank or blunt when communicating through electronic mediums compared to face-to-face interactions that involve observing facial and body movements, listening to voices and modulating responses accordingly (Aoyama et al. 2011). Suler (2004) explored six factors that interact to promote online disinhibition: dissociative anonymity, invisibility, asynchronicity, solipsistic introjection, dissociative imagination, and minimization of authority. Dissociative anonymity enables a person to hide or change their true identity and separate their actions online from the offline world. Invisibility is described as being unable to see the other person which, as Suler argues, can give courage to do things online that otherwise would not be considered. Asynchronicity is the distorted time flow in online

communication that enables delayed response, not needing to cope with other's immediate reaction and thus arguably disinhibiting one's behavior. Solipsistic introjection is the voice or an image of the other person in one's head during online communication. Suler (2004) argues that "online text communication can evolve into an introjected psychological tapestry in which a person's mind weaves these fantasy role plays, usually unconsciously and with considerable disinhibition" (p. 323). Dissociative imagination is separating online and offline worlds, thinking of the former as an imaginary or make-belief world that has no connection to reality. Thus norms and rules from the real world are not applied to online communication leading to disinhibited behavior. Minimization of authority describes the lack or diminished influence of real life cues like one's dress and body language. Being antihierarchical, the Internet enables more equal opportunities for self-expression (Suler 2004). A number of studies have attributed non-verbal cues and lack of eye-contact for inducing sense of online disinhibition (Casale et al. 2015, Lapidot-Lefler and Barak 2012), supporting Suler's theoretical model.

Existing research has generally argued that online disinhibition is closely related to cyberbullying and could induce deviant behavior online (Brown, Jackson and Cassidy 2006, Hinduja and Patchin 2009:21-22, Kowalski, Limber and Agatston 2008:64-65). The most commonly argued aspects of online disinhibition related to cyberbullying are anonymity (Vandebosch and Van Cleemput 2008), lack of immediate consequences (Kowalski et al. 2008:65), asynchronicity (Hinduja and Patchin 2009:22), and absence of rules or authority (Li and Fung 2012:110). In particular, anonymity related to the Internet has been associated with disinhibited behavior online (Kiesler et al. 1984, Sproull and Kiesler 1986, Suler and Phillips 1998). Suler's (2004) proposed theory allows a more comprehensive and structured analysis of cyberbullying, combining all the aforementioned aspects of online disinhibition into one theoretical framework.

To date very few studies have tried to explore the link between online disinhibition and cyberbullying. Exceptions include Görzig and Ólafsson (2013), who examined two dimensions of online disinhibition — disinhibited self-representation online and lack of supervision. The study consisted of approximately 1,000 (total sample 25,142) interviews with children aged 9-16 in 25 European countries. Disinhibited self-representation was measured using three items that assessed online versus face-to-face behavior, ranging from "1=Not true" to "3=Very true" ("I find it easier to be myself on the internet than when I am with people face-to-face." "I talk about different things on the internet than I do when speaking to people face-to-face." "On the internet I talk about private things which I do not share with people face-to-face.") Lack of supervision was a dichotomous variable measuring whether children used a computer or phone from a private room in the house. The study found disinhibited self-representation online (three item scale) to be significantly related to increased cyberbullying, while lack of supervision was not statistically significant (Görzig and Ólafsson 2013).

Varjas and colleagues (2010) examined internal and external motivations of cyberbullying among high school students aged 15-19 in a qualitative exploratory study (20 participants) using Grounded Theory. The study combined anonymity (not knowing the identity of the perpetrator or victim) with disinhibition effect (being able to say things you may not say face-to-face) as one factor of the internal motivations for cyberbullying. The factor was confirmed as a significant predictor for cyberbullying, albeit one of the less frequently mentioned (Varjas, Talley, Meyers et al. 2010).

4.3 Purpose of the Study

The main aim of this study was to fill this existing knowledge gap by examining the link between online disinhibition and cyberbullying and develop a scale that can be used in future

studies to investigate cyberdeviance. Besides addressing the main purpose of the study, a number of other hypotheses were explored:

1. Based on arguments and findings from previous studies, it was hypothesized that online disinhibition will be a significant predictor of cyberbullying (Görzig and Ólafsson 2013, Varjas et al. 2010).

2. It was hypothesized that cyberbullies will score higher on the Online Disinhibition Scale (ODS) than their non-involved peers.

3. Suler (2004) argued for the separation of benign and toxic disinhibition while acknowledging the ambiguous line between the two. To test this assumption, all the items from the ODS were examined via exploratory factor analysis and confirmatory factor analysis.

4. It was hypothesized that the toxic disinhibition subscale will be a significant predictor of cyberbullying.

4.4 Methods

4.4.1 Participants

A total of 941 questionnaires were distributed in six schools in Osaka, Japan. Fifty-four responses were excluded from the analysis due to being incomplete (94.3% completion rate). Participants were 887 senior high school students: 378 males (42.6%), 504 females (56.8%), and 5 not specified (0.6%) aged between 15 and 19 years old (M=16.31, SD=.936). The sample was comprised of students in the first through third year in senior high school: 43.6%, 36.4% and 20.0% respectively. The schools were not chosen randomly, but they did represent different academic levels according to their national exam scores. Two schools could be

categorized as elite, one was above average, one just around average and two were below average. The survey for this study was conducted September through November 2012.

4.4.2 Measures

The questionnaire included general questions about student usage of cellular phones and computers, an eleven item scale measuring online disinhibition, and multiple response questions inquiring about cyberbullying experience. Suler's (2004) theoretical framework on online disinhibition was used to develop the eleven item scale ranging from 0 to 33 (11 items) which consisted of two subscales: "benign disinhibition" (7 items) and "toxic disinhibition" (4 items). The validity of the subscales was addressed by conducting an exploratory factor analysis (EFA) with oblimin rotation of all the eleven ODS items, which yielded two distinct factors for benign and toxic disinhibition, as was theorized (see Table 10). Furthermore, confirmatory factor analysis (CFA) was applied to affirm the results from EFA.

Questions included in the ODS related to online communication, as well as Suler's (2004) concepts of dissociative anonymity, invisibility, asynchronicity, solipsistic introjection, dissociative imagination, and minimization of authority (e.g., "It is easier to communicate online, because you can reply anytime you like," for asynchronicity and "It is easy to write insulting things online, because there are no repercussions," for minimization of authority). The scale (ranging from 0 to 33) was created with higher values representing increased levels of online disinhibition, i.e. those who agreed to the items more strongly scored higher on the scale. The responses ranged from "Disagree" and "Somewhat disagree" to "Somewhat agree" and "Agree" (coded as values 0-3 that were then summed up for ODS and the subscale scores). In addition to the scale, all items were analyzed separately in logistic regression analyses to investigate their individual influence on the dependent variable. Age and gender (coded as male=1, female=2) were added to the models as covariates.

There is no consensus about the suitable time frame to use when asking about cyberbullying. Previous studies have incorporated questions without any time frame (Hinduja and Patchin 2008, Juvonen and Gross 2008, Li 2010), the past couple of months (Kowalski and Limber 2007, Mishna et al. 2010), twelve months (Görzig and Ólafsson 2013) or a combination of specific time frame and frequency (Wensley and Campbell 2012). To be able to gain more in-depth knowledge of cyberbullying, this study asked students about cyberbullying experiences since they started elementary school, following that with a question about the past six months. This way both overall and recent experiences could be gauged and compared. Furthermore, it is quite possible that a student cyberbullied someone a few years before the survey, while his or her normative beliefs and attitudes have changed over the time, thus distorting the results in the overall time frame. Multiple response questions were used to measure cyberbullying experience. To gain a comprehensive understanding of cyberbullying, the questionnaire included various online behaviors and use of technology without specifically defining these behaviors as bullying (e.g., upload/publish a picture or video of a friend online without permission). Cyberbullying experience overall and during the past six months was coded as two separate dichotomous variables: 0=no experience and 1=experience being a cyberbully.

4.4.3 Procedure

Questionnaires were handed out in the classroom by the researcher or the teacher in charge of the class. The purpose of the study was explained, as well as the right not to answer any particular questions and abstain from participation completely. The anonymity of the survey was emphasized. Time allowance for completion was 15-20 minutes. Each student was handed an envelope in which to enclose the completed questionnaire. The completed questionnaires were collected by the researcher or the teacher in charge of the class. All the procedures and the questionnaire contents were approved by the Research Ethics Committee,

Departments of Sociology and Anthropology, Graduate School of Human Sciences, Osaka University (application #2011035).

4.4.4 Data analyses

Logistic regression was chosen as the method most fit to analyze the dichotomous dependent variables expressing cyberbullying experience (Menard 2002). Gender, age and Internet usage were added as covariates in the models. In order to identify and validate the Online Disinhibition Scale (ODS), two types of analyses, exploratory factor analysis and confirmatory factor analysis, were employed. Frequencies and logistic regressions were conducted by IBM SPSS Statistics 21.0; EFA and CFA were conducted in R ("psych" (1.4.5) and "lavaan" (0.5-16) packages). The significance level was set at $p<0.05$.

4.5 Results

4.5.1 Frequencies

In this study, 98.4% of the students owned at least one cellular phone, and 63.8% of them used a smartphone. Eighty-four percent of the students said they used the Internet on their phones while 75.3% answered that they also used it on their PCs at home. Of all the students 7.9% (8.4% of males; 7.4% of females) acknowledged ever cyberbullying others. When asked about the past 6 months the number went down to 2.9% (3.5% of males; 2.2% of females). These numbers are slightly smaller than the average reported rates of 20%-40% for cyberbullying victimization (Tokunaga 2010), which indicates potential under-reporting. It is possible that these results were biased by the students due to social desirability and recall/reporter bias. Furthermore, Lee and Cornell (2009) found only a modest correlation between self-reported bullying behavior and peer nominations.

Of all the items measuring cyberbullying experience 'Slandering someone online' was the most common type (see Table 9). Self-reported daily Internet usage among the students was

as follows: less than one hour 47.5%, one to two hours 18.2%, two to three hours 12.9%, three to four hours 8.2%, and more than four hours 13.2%. When comparing Internet use by gender, females were much more avid users. In the three to four hour category there were 10.7% females while only 4.6% males responded the same. In the last category (>4 hours) females outnumbered males by 15.6% to 10.3%.

Table 9. Prevalence of cyberbullying by type.

Item	Cyberbullying (overall, %)	Cyberbullying (6 months, %)
Upload/publish a picture or video online without permission	2.3	1.1
Spreading messages containing insults or bad rumors among classmates or acquaintances	2.7	1.1
Slander someone online	3.5	1.4
Send insulting or abusive messages/e-mails	0.7	0.2
Send sexual messages/e-mails	0.9	0.7
Tamper with or create someone's fake online profile	0.3	0.3
Abuse or slander someone on phone	0.7	0.5

N=877.

4.5.2 Exploratory factor analysis

An exploratory factor analysis with polychoric correlations (which give more accurate results with ordinal data than Pearson correlations (Holgado–Tello, Chacón–Moscoso, Barbero–García et al. 2010)) and oblimin rotation was conducted to explore latent variables representing the dimensions of the ODS scale items (see Table 10).

First, the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were used to assess the data suitability for factor analysis. The KMO test showed a score of 0.87 which is above the required 0.5 (>0.8 is considered a good fit) for conducting EFA. Bartlett's test of sphericity was significant: Chi-Square=3531.23, $p<.000$, which suggests the correlation matrix is not an identity matrix and consequently appropriate for factor analysis.

Second, the MAP-test and Horn's parallel analysis were performed to assess the number of extractable factors in relation to the latent variables. According to the established criteria,

both tests suggested a two factor solution. The eigenvalues of the first two factors in the EFA were larger when compared to parallel analysis (5.52 and 1.73 versus 1.23 and 1.16). The eigenvalue of the third factor in the parallel analysis (1.12) exceeded the eigenvalue extracted by the EFA (0.82), which suggests the extraction of only the first two factors (Franklin, Gibson, Robertson et al. 1995, O'connor 2000). The two factor solution explained 59.2% of the variance. The benign disinhibition factor loaded seven variables explaining 30.3% of the variance (eigenvalue=5.52), while the toxic disinhibition factor loaded four variables explaining 28.9% of the variance (eigenvalue=1.73). The overall ODS, as well as both subscales showed reliable internal consistency (Cronbach's α>.81).

Table 10. Factor loadings for the Online Disinhibition Scale items by exploratory factor analysis.

	Item	Factor[a]		M	SD
		1.	2.		
1. Factor: Benign disinhibition					
q1	It is easier to connect with others through ICTs than talking in person	**.664**		1.04	.95
q2	The Internet is anonymous so it is easier for me to express my true feelings or thoughts	**.821**		1.03	.98
q3	It is easier to write things online that would be hard to say in real life because you don't see the other's face	**.835**		1.06	.97
q4	It is easier to communicate online because you can reply anytime you like	**.676**	-.113	1.62	.95
q5	I have an image of the other person in my head when I read their e-mail or messages online	**.512**		1.33	.92
q6	I feel like a different person online	**.568**	.181	.69	.87
q7	I feel that online I can communicate on the same level with others who are older or have higher status	**.604**	.153	.95	.95
2. Factor: Toxic disinhibition					
q8	I don't mind writing insulting things about others online, because it's anonymous		**.907**	.21	.53
q9	It is easy to write insulting things online because there are no repercussions	.197	**.751**	.33	.65
q10	There are no rules online therefore you can do whatever you want		**.915**	.21	.53
q11	Writing insulting things online is not bullying		**.899**	.24	.58

[a]Factor loadings below 0.1 are not shown. KMO=.873; Bartlett's test=3531.233, *p*<.000. ODS: 11 items (M=8.72; SD=5.58; Cronbach's α=.83); Benign disinhibition scale: 7 items (M=7.72; SD=4.52; Cronbach's α=.81); Toxic disinhibition scale: 4 items (M=1.00; SD=1.90; Cronbach's α=.85).

4.5.3 Confirmatory factor analysis

In order to validate the two factor solution from the EFA, a separate confirmatory factor analysis (CFA) was conducted (see Fig. 1). Given that data were non normally distributed showing increased kurtosis and skewness, diagonally weighted least squares (DWLS) was chosen as an appropriate method (Mîndrilă 2010). For the two factor model, the chi-square was χ^2 =149.877, df=43, *p*<.000. In contrast to most statistical tests, a non-significant chi-square indicates a good model fit for CFA. However, because the chi-square statistic is sensitive to stronger correlations among the variables, and larger sample sizes almost always

result in a significant chi-square (Hu and Bentler 1999, Jöreskog 1969, Kline 2011) and an inflated χ^2/df ratio (in this model χ2/df=3.49; less than 5 can be considered for a good fit; Bollen 1989:272, Hoelter 1983), therefore other fit indices were chosen to assess the model. As a consequence, fit indices such as Tucker-Lewis index (TLI), comparative fit index (CFI), and root mean square error of approximation (RMSEA) were examined. All of the aforementioned indices adhered to the established margins for a good model fit: TLI=.991 (>.95 acceptable model fit, >.97 a good fit; Schermelleh-Engel, Moosbrugger and Müller 2003)), CFI=.993 (>.95 acceptable model fit, >.97 a good fit; Schermelleh-Engel et al. 2003)), RMSEA=.053 (good model fit <.08, ideal model fit <.05; Browne and Cudeck 1993).

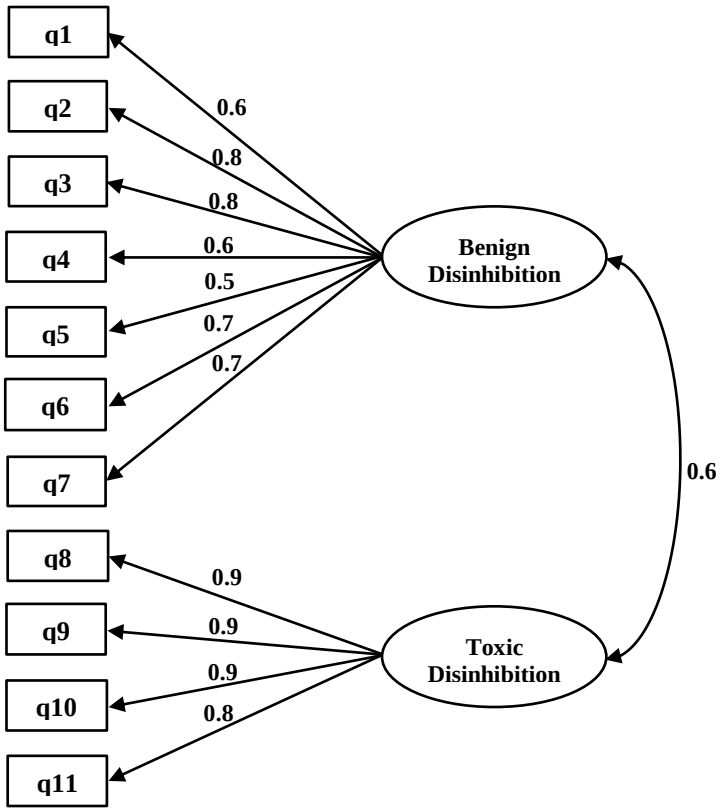

Figure 1. Standardized factor loadings for confirmatory factor analysis of the Online Disinhibition Scale.

4.5.4 Online Disinhibition

Items representing benign disinhibition had higher mean and standard deviation scores than those for toxic disinhibition (see Table 10). Students clearly disagreed more with the statements in the toxic disinhibition subscale and the answers were less evenly distributed.

This shows that most people do disagree with antisocial or deviant behavior that is not within the established norms within the society. Gender differences for mean online disinhibition scores were rather small albeit significant (*p*=.023), males scored higher on average: males=9.21 (SD=5.82, N=378); females=8.35 (SD=5.37, N=504). On the other hand, the discrepancy between those students who had past cyberbullying experience (involved group) and students who had not cyberbullied others (non-involved group) was much more clear-cut. The difference between both groups was significant in the overall time frame (non-involved M=8.26, SD=5.12; involved M=13.67, SD=7.67, *p*<.000, N=877), as well as the past six months (non-involved M=8.47, SD=5.31; involved M=15.96, SD=8.22, *p*<.000, N=877).

Table 11. Logistic regression analyses using the Online Disinhibition Scale as a predictor of cyberbullying.

	Cyberbullying (overall)[a]			Cyberbullying (6 months)[b]		
	r	B (S.E.)	Odds ratio (CI)	*r*	B (S.E.)	Odds ratio (CI)
Gender	-.018	-.093 (.278)	.91 (.53-1.57)	-.040	-.437 (.459)	.65 (.26-1.60)
Age	.025	.054 (.145)	1.06 (.79-1.40)	-.007	-.126 (.252)	.88 (.54-1.44)
Internet use	.127**	.182 (.089)	1.20* (1.01-1.43)	.099**	.215 (.144)	1.24 (.93-1.65)
ODS	.262**	.142 (.023)	1.15*** (1.10-1.21)	.225**	.181 (.033)	1.20*** (1.12-1.28)

Both models are significant: [a]-2 Log likelihood=407.407, Nagelkerke R^2=.150, Chi-square=8.650; [b]-2 Log likelihood=171.849, Nagelkerke R^2 =.205, Chi-square=6.251.
r=Pearson correlation; **p*<.05; ***p*<.01; ****p*<.001; N=841.

Logistic regression analyses showed that the relationship between online disinhibition and cyberbullying was significant in both models, which represented the overall time frame and the last six months (see Table 11). Even after controlling for gender, age and Internet use, those students who reported higher levels of online disinhibition were 1.15 times (*p*<.000; overall time frame) and 1.20 times (*p*<.000; past six months) more likely to engage in cyberbullying others. Furthermore, the models explained 15% and 21% of cyberbullying behavior in the overall and 6 month time frame. Among the covariates, Internet use showed significance in the overall time frame (OR=1.20; *p*=.04).

Further logistic regression analyses revealed that ODS was a significant predictor of all the individual items of cyberbullying and most of the cyberbullying items for the past six months

(see Table 12). The highest odds ratio of all the items measuring cyberbullying was for sending sexual messages and e-mails: OR=1.18, p<.000 for overall time frame and OR=1.18, p=.002 for the past six months. This shows that online disinhibition is a significant predictor of overall cyberbullying experience, as well as most of the individual items.

Table 12. Logistic regression coefficients representing the effects of the Online Disinhibition Scale on individual types of cyberbullying.

	Cyberbullying (overall) [a, b]			Cyberbullying (6 months) [c]		
	r	B (S.E.)	Odds ratio (CI)	*r*	B (S.E.)	Odds ratio (CI)
Upload/publish a picture or video online without permission	.109**	.105(.033)**	1.11 (1.04-1.19)	.082*	.108(.045)*	1.11 (1.02-1.22)
Spreading messages containing insults or bad rumors among classmates or acquaintances	.164**	.139(.030)***	1.15 (1.08-1.22)	.130***	.154(.042)***	1.17 (1.08-1.27)
Slander someone online	.148**	.116(.027)***	1.12 (1.06-1.18)	.127***	.142(.039)***	1.15 (1.07-1.25)
Send insulting or abusive messages/e-mails	.102**	.153(.052)**	1.17 (1.05-1.29)	.016	.052(.113)	1.05 (0.85-1.36)
Send sexual messages/e-mails	.129**	.165(.046)***	1.18 (1.08-1.29)	.112**	.163(.052)**	1.18 (1.06-1.30)
Tamper with or create someone's fake online profile	.077*	.158(.071)*	1.17 (1.02-1.35)	.077*	.158(.071)*	1.07 (1.02-1.35)
Abuse or slander someone on phone	.075*	.121(.055)*	1.13 (1.01-1.26)	.043	.083(.066)	1.09 (0.96-1.24)

[a]Each row represents two separate correlations and logistic regression models where ODS scores were used to predict the corresponding type of cyberbullying behavior.
Both models are significant: [b]-2 Log likelihood=408.373, Nagelkerke R^2=.148, Chi-square=11.267; [c]-2 Log likelihood=173.136, Nagelkerke R^2=.198, Chi-square=9.457.
r=Pearson correlation; **p*<.05; ***p*<.01; ****p*<.001; N=841.

Next, all items from the ODS were analyzed separately in a logistic regression analysis with gender, age, and Internet use inserted as covariates (see Table 13). Both models in the analysis corresponding to the overall and past six month time frames were significant. First, Internet use was significantly associated with cyberbullying in both models: OR=1.24, *p*=.019 for overall and OR=1.37, *p*=.042 for the past six months. These results further support findings by previous studies in which Internet use was positively associated with cyberbullying (Juvonen and Gross 2008, Ybarra 2004). Second, the item, “It is easier to write things online that would be hard to say in real life, because you don't see the other's face,” representing Suler’s (2004) concept of invisibility, was also significantly associated in both models: OR=1.62, *p*=.014 for overall and OR=2.29, *p*=.018 for the last six months. Third, the item, “It is easy to write insulting things online because there are no repercussions,” corresponding to minimization of authority, was significant in both models: OR=2.03, *p*=.001 for overall and OR=2.29, *p*=.018. Fourth, the item, “There are no rules online therefore you can do whatever you want,” which is linked to minimization of authority as well as the

structure of the Internet itself, was significantly associated with cyberbullying in the model for the past six months: OR=2.33, *p*=.043, but showed no significance in the overall time frame. The models explained 20% and 30% of cyberbullying behavior in the overall and 6 month time frame. Gender and age were not significantly associated with cyberbullying in the two models.

Table 13. Logistic regression analyses using the Online Disinhibition Scale items as predictors of cyberbullying.

Item	Cyberbullying (overall)[a]		Cyberbullying (6 months)[b]	
	B (S.E.)	Odds ratio (CI)	B (S.E.)	Odds ratio (CI)
Gender	-.117 (.294)	.89 (.50-1.58)	-.413 (.506)	.66 (.25-1.79)
Age	.044 (.149)	1.04 (.80-1.40)	-.159 (.270)	.85 (.50-1.45)
Internet use	.218 (.093)	1.24* (1.04-1.49)	.317 (.156)	1.37* (1.01-1.87)
It is easier to connect with others through ICTs than talking in person	-.071 (.167)	.93 (.67-1.29)	-.405 (.279)	.67 (.39-1.15)
The Internet is anonymous so it is easier for me to express my true feelings or thoughts	-.081 (.194)	.92 (.63-1.35)	.002 (.328)	1.00 (.53-1.91)
It is easier to write things online that would be hard to say in real life because you don't see the other's face	.482 (.196)	1.62* (1.10-2.38)	.828 (.349)	2.29* (1.15-4.54)
It is easier to communicate online because you can reply anytime you like	.364 (.191)	1.44† (.99-2.09)	.490 (.343)	1.63 (.83-3.20)
I have an image of the other person in my head when I read their e-mail or messages online	.146 (.166)	1.16 (.84-1.60)	.142 (.275)	1.15 (.67-1.97)
I feel like a different person online	.078 (.172)	1.08 (.77-1.52)	-.076 (.291)	.93 (.52-1.64)
I feel that online I can communicate on the same level with others who are older or have higher status	-.292 (.181)	.75 (.52-1.07)	-.430 (.311)	.65 (.35-1.20)
I don't mind writing insulting things about others online, because it's anonymous	.228 (.302)	1.26 (.70-2.27)	.110 (.443)	1.12 (.47-2.66)
It is easy to write insulting things online because there are no repercussions	.707 (.222)	2.03** (1.31-3.14)	.830 (.351)	2.29* (1.15-4.57)
There are no rules online, therefore you can do whatever you want	.212 (.298)	1.24 (.69-2.22)	.845 (.417)	2.33* (1.03-5.27)
Writing insulting things online is not bullying	-.122 (.279)	.89 (.51-1.53)	-.244 (.428)	.78 (.34-1.81)

Both models are significant: [a]-2 Log likelihood=388.588, Nagelkerke R^2=.199, Chi-square=7.655; [b]-2 Log likelihood=152.985, Nagelkerke R^2=.300, Chi-square=5.791.
†*p*<.10; **p*<.05; ***p*<.01; N=841.

Finally, benign and toxic disinhibition subscales were compared to estimate their relative influence on cyberbullying (see Table 14). As both subscales showed adequate reliability with Cronbach's alphas exceeding 0.8, the sums of each scale were used in consequent regression analyses. Both models were statistically significant. In the overall time frame both subscales showed significance: benign disinhibition had slightly smaller odds ratios (OR=1.11, *p*=.001) than toxic disinhibition (OR=1.25, *p*<.000), while in the past six months model toxic disinhibition retained its significant influence on cyberbullying (OR=1.34, *p*<.000), while benign disinhibition was just outside of the 0.05 significance level (OR=1.12, *p*=.054). The models explained 16% and 22% of cyberbullying behavior in the overall and 6

month time frame. Among the covariates, Internet use was significant in the overall time frame (OR=1.23, *p*=.024).

Table 14. Logistic regression analyses using the benign and toxic disinhibition subscales as predictors of cyberbullying.

	Cyberbullying (overall)[a]		Cyberbullying (6 months)[b]	
	B (S.E.)	Odds ratio (CI)	B (S.E.)	Odds ratio (CI)
Gender	-.047 (.282)	.96 (.55-1.65)	-.396 (.469)	.67 (.27-1.69)
Age	.041 (.145)	1.04 (.78-1.39)	-.156 (.253)	.86 (.52-1.40)
Internet use	.204 (.090)	1.23* (1.03-1.46)	.268 (.150)	1.31† (.98-1.75)
Benign dis.	.107 (.034)	1.11** (1.04-1.19)	.109 (.057)	1.12†† (1.00-1.25)
Toxic dis.	.220 (.059)	1.25*** (1.11-1.40)	.294 (.082)	1.34*** (1.14-1.58)

Both models are significant: [a]-2 Log likelihood=405.356, Nagelkerke R^2=.156, Chi-square=7.141; [b]-2 Log likelihood=169.473, Nagelkerke R^2=.217, Chi-square=8.446.
†*p*=.073; ††*p*=.054; **p*<.05; ***p*<.01; ****p*<.001; N=841.

4.6 Discussion

As the use of technology is becoming more and more ubiquitous, a growing body of evidence suggests that online disinhibition affects computer mediated communication and behavior in cyberspace. The main aim of this study was to develop a scale to measure online disinhibition and explore the link between online disinhibition and cyberbullying in a sample of high school students. Suler (2004) theorized online disinhibition to have benign and toxic dimensions, at the same time acknowledging that no clear line of demarcation could be drawn between the two. Consistent with his hypothesis, the exploratory factor analysis yielded a two factor solution, with ‘benign disinhibition’ and ‘toxic disinhibition’ explaining 59.2% of the variance. The two-factor solution was consequently supported by confirmatory factor analysis that showed a good fit for validity. The results concerning the subscales will be discussed later.

Internet use was significantly associated with cyberbullying in four out of six logistic regression models (in one of the non-significant models *p*=.073, see Table 14). This is a clear indication that Internet use plays a role in cyberbullying and should be taken in account. While some studies did not find internet use a significant predictor of cyberbullying (Smith et al. 2008), this study adds to the growing body of evidence for the contrary position (Juvonen

and Gross 2008, Ybarra 2004). Gender and age did not show significance in any of the regression models. In this study the difference in offending rates between the genders was marginal (less than 1.3% in both time frames), which could explain the non-significant result in regression analyses. Previous studies on cyberbullying show differing results when it comes to gender, some indicating a significantly larger male proportion (Li 2006, Slonje and Smith 2008), however others did not find such differences (Smith et al. 2008, Williams and Guerra 2007, Wolak, Mitchell and Finkelhor 2007).

A comparison of students involved in cyberbullying and their non-involved peers showed that the former groups' mean score on the ODS was higher. While this result does not directly link online disinhibition with cyberbullying, it does show that cyberbullies are more disinhibited when using the Internet. Logistic regression analyses were conducted to explore this difference of online disinhibition levels in connection with cyberbullying. The results consequently showed that those with higher scores on the scale were up to 1.20 times more likely to be cyberbullies. Further logistic regressions analyses showed that the ODS was a significant predictor of most of the individual cyberbullying items. Here the few non-significant results could be explained by the low number of students who answered affirmatively to these items for the past six month time frame. Thus separating cyberbullying into a large number of subcategories is not advised, unless a very large sample of respondents is employed.

Based on the aforementioned results, it is evident that online disinhibition is an important factor in cyberbullying, and its influence is independent of gender and age. The only significant covariate was Internet use, but its predictive power was not as high as that of the ODS. This implies that those who scored higher on the ODS were more likely to cyberbully others, even if they didn't spend more time online than the average student. Therefore, the disinhibiting influence of technology on one's behavior can be immediate. The next step

would be to measure possible changes of online disinhibition levels in one session and over time. Furthermore, is online disinhibition dependent on the types of activities conducted while in cyberspace or the length of time spent online? Suler (2004:325) argued that "The self does not exist separate from the environment in which that self is expressed." As we cannot detach from the social environment completely, it makes us cultural beings and even while disinhibited in cyberspace our actions are connected to the values and norms internalized within, albeit to a lesser degree.

An examination of individual ODS items showed varied results. First, the item representing 'invisibility' was a significant predictor of cyberbullying. Suler's concept of invisibility differs from anonymity in one crucial aspect. Anonymity conceals one's identity, but other people may still be seen on a computer screen. Invisibility, on the other hand, works the opposite way: while the background, habits or other details of others may be known, the people are not seen (Suler 2004). A study of adult flaming behavior (defined as "the use of hostile expressions towards others in online communication", p. 434) by Lapidot-Lefler and Barak (2012) examined the effects of anonymity and invisibility on inducing toxic online disinhibition. Lapidot-Lefler and Barak (2012) divided invisibility into two different measures – one that included eye-contact and one that didn't. Their results suggested that the invisibility measure with eye-contact was the most significant contributor to online disinhibition. In this study invisibility was measured by asking students how strongly they agree with the following statement "It is easier to write things online that would be hard to say in real life, because you don't see the other's face" which does include eye-contact. The students who agreed more with this statement were up to 2.29 times more likely to cyberbully others, thus supporting the findings by Lapidot-Lefler and Barak (2012).

Second, the item representing minimization of authority was a significant predictor of cyberbullying. Hinduja and Patchin (2009:21) argued that due to disinhibition it is more

difficult to control one's behavior online when the repercussions of those actions are not immediate or clear to the person. Students who scored higher were as much as 2.33 times more likely to cyberbully others. It points out the inherent nature of cyberspace, where deviant behavior can go unpunished and repercussions seem unlikely and distant. A study by Pornari and Wood (2010) exploring traditional and cyberbullying showed that aggressors exhibited greater levels of moral disengagement online. Pornari and Wood hypothesized that it could be due to the distance between the aggressor and the victim that technology and anonymity provides, or because online activities are considered recreational and seen as just a game. The present study tends to support the former hypothesis, but further examination of online disinhibition and traditional bullying is needed to confirm these findings.

Third, the item associated with the attitude that there are no rules online thus permitting antinormative behavior was a significant predictor of cyberbullying in the time frame six months prior to the survey. The Internet is governed by norms which are not always compatible with rules established by the larger society (Mason 2008). This in turn could lead to misinterpretation and deliberate ignorance of the rules online. King, Walpole and Lamon (2007:S67) analyzed data from the i-SAFE survey of 2006 and found that, "Among students, 41% do not share where they go or what they do on the Internet with their parents and 26% of students believe their parents would at least 'be concerned' if their parents knew what they did on the Internet." Furthermore, Dehue, Bolman and Vollink (2008) discovered that, although 80% of parents set rules for how the Internet should be used, cyberbullying aggression reported by children was more than three times higher than what parents reported about their children. This study supports the aforementioned findings. Deliberate or not, some students think rules do not apply to them online, which can lead to cyberbullying others. The insignificant result in the overall time frame could be due to the limitations of the survey design. The overall time frame includes cyberbullying experiences over a number of years,

while respondent's normative beliefs and attitudes are measured at the present time, which in turn can lead to biased results. Therefore, using a shorter time frame when measuring cyberbullying, is likely to yield more reliable results, while associations examined in studies measuring only the overall cyberbullying experience should be interpreted with caution.

Next, regression analysis revealed that both benign and toxic disinhibition subscale scores were significant predictors of cyberbullying. The predictive power of toxic disinhibition was slightly higher in the overall time frame (OR=1.25 versus OR=1.11), but only toxic disinhibition was significant in the regression model predicting cyberbullying for the past six months (OR=1.34). Moreover, all the models explained between 15% and 30% of variance in cyberbullying. Compared to Study Two, these results show that ODS is better at predicting cyberdeviance than traditional theories. However, acknowledging the modest success of ODS, it is clear that traditional theories of deviant behavior are useful in predicting cyberdeviance as well. In light of the evidence from Study Two, as well as this study, a combined approach of traditional theories and ODS is most likely to yield the best results in predicting cyberdeviance.

Lastly, Suler (2004) tried to separate the benign and toxic influence of online disinhibition while also taking into account the ambiguity between the two. EFA and CFA analyses showed that the benign and toxic aspects can be separated, thus providing a tool to measure the distinct influence of each factor on human behavior in computer mediated communication. Results in this study show that toxic disinhibition is clearly a significant factor in cyberbullying, but conclusions concerning benign disinhibition are not as clear cut. In the overall time frame, benign disinhibition was a significant predictor of cyberbullying, which could mean that the students influenced by it are not completely aware of the fact they are engaging in cyberbullying; therefore even the positive aspects of disinhibited behaviors can have negative consequences. However, one's views and attitudes which comprise the values

of these subscales change overtime, making the shorter time frame more reliable. Future research should address this issue and show how and why not only toxic but also benign disinhibition is contributing to cyberbullying.

4.7 Limitations

Some limitations of the current study must be considered. First, although the sample size is relatively large, it was not random and only the schools that agreed to participate in the survey were included. Second, the study focused on high school students in Japan, therefore future research is needed to determine whether these results can be generalized to other age populations and countries. Third, the study employed a self-report questionnaire, which infers the possibility of reporting bias, in the form of socially desirable responses. Fourth, as the first study to examine online disinhibition and cyberbullying, future research will be needed to corroborate these findings.

4.8 Conclusions

Research to date has mostly focused on the toxic or negative side of online disinhibition and its effects on cyberdeviance, commonly exploring only a particular aspect of the theory. This is the first study to examine the influence of online disinhibition, exploring both the benign and the toxic dimensions in one sample.

The main purpose of the study was to develop a scale to measure online disinhibition, which was achieved. Nevertheless, a number of issues remain. First, the ODS did significantly predict cyberbullying; however it was only slightly better than traditional theories that were tested in Study Two. Taking into account the online–offline overlap results from Study One, it is possible that both traditional theories and ODS predict a certain amount of cyberdeviance, which might be common to both theories, as well as separate. Second, the ODS measured only benign and toxic factors, while not taking into account a possible neutral dimension of

online disinhibition. The study has shown that the two dimensions cannot be easily separated and both can be significant predictors of cyberbullying. More research is needed to explore the differences between benign and toxic factors, as well as their influence on various online behaviors. For example, does online disinhibition influence other antinormative behaviors like flaming or cyberstalking? What are the positive effects of online disinhibition in cyberspace?

Finally, taking the limitations into account, the findings of the current study have important implications for future research and the shaping of educational policy. First, the significant relationship between online disinhibition and cyberbullying indicates that technology can affect behavior in cyberspace with possible negative consequences. Educators and parents should be aware of adolescents' use of the Internet. Second, programs in constructive social interaction and cyberbullying prevention may benefit from incorporating the findings from the current study. Reminding students that social norms, such as respect for others, apply also to the online environment and that one's actions in cyberspace almost always leave a trace, could help discourage cyberbullying activities.

4.9 Part 2: Is there a Neutral Dimension to Online Disinhibition? Revision and Update of the Online Disinhibition Scale (Study Four)

According to the results in Study Three, the ODS is a useful instrument for measuring cyberdeviance. That said, one unresolved issue remained: the ambiguous nature of online disinhibition itself. Is there such a thing as neutral online disinhibition? If it exists, can we measure it? Based on previous research, this study will investigate the applicability of online disinhibition measures to various cyberspace behaviors, which are not necessarily deviant, and advance our understanding of online disinhibition by proposing a new revised scale.

The debate about online disinhibition is still an open question since John Suler published his paper in 2004, as very few studies have tried to empirically test his assertions (Suler 2004). Even before Suler's landmark paper, researchers had attempted to operationalize online disinhibition. Morahan-Martin and Schumacher (2000) developed items that measure a number of facets in online communication and grouped them in the following categories: social confidence, socially liberating, competency, ease of communication, disadvantages, and lurking. An example item they used would be: "The anonymity of being online is liberating." In a sample of undergraduate students, they found partial support for their hypotheses for predicting pathological Internet use; pathological Internet users were more likely than other to use the Internet to relax, make new friends, look for support and were more open and friendly online. These results were corroborated in a later study employing a university student sample in England, where the measures for online disinhibition accounted for 44.3% of variance in pathological Internet use (Niemz, Griffiths and Banyard 2005).

One other approach to online disinhibition has been to apply the disinhibition subscale from Zuckerman's sensation-seeking scale to the Internet (Child, Haridakis and Petronio 2012). However, the sensation-seeking scale was developed before the colossal rise of the Internet and focuses on impulsivity and disinhibition in offline settings, ignoring technology completely. Do these personality traits apply in cyberspace too? Armstrong, Phillips and Saling (2000) used the disinhibition subscale from the sensation-seeking scale to address Internet addiction and found no significant effect. In contrast, the subscale showed that increasingly disinhibited bloggers shared more information and held more self-centric views on privacy (Child et al. 2012).

Besides the aforementioned approaches, one study has tried to empirically test Suler's theory: Constantiou, Legarth and Olsen (2011) measured online disinhibition in the online role-playing game *World of Warcraft*. In their results, online disinhibition positively influenced

players' intentions to engage in real money trading within the game (Constantiou et al. 2011). Nonetheless, the scale was designed specifically for *World of Warcraft* players and it did not address the distinction between benign and toxic disinhibition.

4.10 Purpose of the Study

Suler (2004) described online disinhibition, dividing its influence into toxic and benign (for a detailed discussion see Study Three). However, he also noted that both of these dimensions could overlap depending on the circumstances, and thus there is some ambiguity involved. Study Three already demonstrated that even the benign dimension of disinhibition can associated with misbehavior, which in this case was cyberbullying. This prompts a question: is there such as thing a neutral influence when it comes to online disinhibition? Building on the findings from Study Three, the purpose of this study is to answer the question of online disinhibition and neutrality and propose a revised instrument for the measurement of online disinhibition.

4.11 Methods

4.11.1 Participants

For this study an online panel survey was employed. All the participants were members of the "Quick Mill" survey service owned by Macromill Inc. The panel was comprised from a sample of Internet users aged 20–59 years. A total of 2,400 participants were randomly chosen from the 16 age groups (150 from each group) available in the panel. Fifty-three questionnaires were excluded due to being incomplete (97.8% completion rate) making the final sample 2,347 (50.8% females). The survey was conducted from July 31 until August 3, 2014.

4.11.2 Measures

The online disinhibition items were divided into three categories: benign, neutral and toxic. Each category consisted of three items (see Table 15). Respondents were asked how strongly they agree or disagree with the items on a 5-point Likert scale. The responses ranged from "Fully disagree," "Somewhat disagree," "Neither agree nor disagree" to "Somewhat agree," and "Fully agree" (coded as 1 – Fully disagree to 5 – Fully agree).

4.11.3 Data analyses

EFA and CFA were conducted in R 3.2.1 ("psych" (1.5.6) and "lavaan" (0.5-18) packages). The significance level was set at $p<0.05$.

4.12 Results

4.12.1 Exploratory factor analysis

For exploratory factor analysis, polychoric correlations were chosen over the traditional Pearson correlations because they tend to provide more accurate results for data with ordinal variables (Holgado–Tello et al. 2010). Oblimin rotation was used in the analysis because of high correlations among the variables (Costello and Osborne 2005). The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were used to assess the data suitability for factor analysis. The KMO test score of 0.9 which is above the required 0.5 (>0.8 is considered a good fit) for conducting EFA. Bartlett's test of sphericity was significant: Chi-Square=13186.05, $p<.000$ suggesting that the correlation matrix is appropriate for factor analysis. To test the most appropriate number of extractable factors Horn's parallel analysis was performed. Based on the eigenvalues derived from EFA (largest three values: 5.52; 1.31; 0.52), parallel analysis suggested a three factor solution (Franklin et al. 1995, O'connor 2000). The three factor solution explained 62.5% of the variance (see Table 15). However, a closer inspection of the loadings for all the factors shows that the

distribution is not as even as theory would have predicted. Toxic disinhibition is very well represented, but one of the neutral variables (q5) has the highest loading in that factor. The same situation can be observed with benign disinhibition and another neutral variable (q4) as well. Lastly, the neutral disinhibition factor has one of the original neutral variables (q6) and two of the benign variables (q2 and q3) with their highest loadings in the neutral factor. These results clearly indicate that while theoretically a three factor solution makes sense, in reality the neutral variables attach themselves to either benign or toxic factors.

Therefore, another EFA was conducted to see how well a two factor solution with all the nine variables would work (see Table 16). Here we can more clearly see the ambiguity of the neutral variables. Two of the three neutral variables have reasonably high loadings in both factors, which means that their further use in a future study would be highly problematic.

Table 15. Factor loadings for the Online Disinhibition Scale items by exploratory factor analysis (three factor solution).

Item	Factor[a]			M	SD
	1.	2.	3.		
1. Factor: Benign disinhibition					
q1 On the Internet it is easier to open myself up to someone I have just met		.852		2.69	1.06
q2 On the Internet it is easier to talk openly about my worries or troubles		.384	.446	2.78	1.12
q3 On the Internet it is easier to compliment or show affection to others without feeling shy		.366	.451	3.11	1.08
1. Factor: Neutral disinhibition					
q4 On the Internet it is easier to talk about things that would be difficult to say face-to-face	.138	.679		3.10	1.11
q5 On the Internet it is easier to say or do something different from my usual self	.612	.232		2.97	1.16
q6 On the Internet it is easier to express my real feelings or thoughts			.941	2.98	1.11
2. Factor: Toxic disinhibition					
q7 On the Internet it is easier to annoy or disturb someone I don't like	.930		-.117	3.02	1.22
q8 On the Internet it is easier to blame or criticize someone without fear of revenge or repercussions	.793		.173	2.84	1.21
q9 On the Internet it is easier to ridicule or make fun of someone	.923			2.91	1.24

[a]Factor loadings below 0.1 are not shown. Benign disinhibition subscale: Cronbach's α=.79; Neutral disinhibition subscale: Cronbach's α=.78; Toxic disinhibition subscale: Cronbach's α=.90.

Table 16. Factor loadings for the Online Disinhibition Scale items by exploratory factor analysis (two factor solution with the neutral dimension included).

	Item	Factor[a]		M	SD
		1.	2.		
q1	On the Internet it is easier to open myself up to someone I have just met	.850	-.163	2.69	1.06
q2	On the Internet it is easier to talk openly about my worries or troubles	.789		2.78	1.12
q3	On the Internet it is easier to compliment or show affection to others without feeling shy	.761		3.11	1.08
q4	On the Internet it is easier to talk about things that would be difficult to say face-to-face	.744		3.10	1.11
q5	On the Internet it is easier to say or do something different from my usual self	.321	.564	2.97	1.16
q6	On the Internet it is easier to express my real feelings or thoughts	.680	.260	2.98	1.11
q7	On the Internet it is easier to annoy or disturb someone I don't like		.884	3.02	1.22
q8	On the Internet it is easier to blame or criticize someone without fear of revenge or repercussions		.847	2.84	1.21
q9	On the Internet it is easier to ridicule or make fun of someone		.947	2.91	1.24

[a]Factor loadings below 0.1 are not shown.

Table 17. Factor loadings for the Online Disinhibition Scale items by exploratory factor analysis (two factor solution without the neutral dimension).

	Item	Factor[a]		M	SD
		1.	2.		
1. Factor: Benign disinhibition					
q1	On the Internet it is easier to open myself up to someone I have just met	-.111	.821	2.69	1.06
q2	On the Internet it is easier to talk openly about my worries or troubles	.104	.755	2.78	1.12
q3	On the Internet it is easier to compliment or show affection to others without feeling shy		.709	3.11	1.08
2. Factor: Toxic disinhibition					
q7	On the Internet it is easier to annoy or disturb someone I don't like	.859		3.02	1.22
q8	On the Internet it is easier to blame or criticize someone without fear of revenge or repercussions	.849		2.84	1.21
q9	On the Internet it is easier to ridicule or make fun of someone	.949		2.91	1.24

[a]Factor loadings below 0.1 are not shown. Benign disinhibition subscale: Cronbach's α=.79; Toxic disinhibition subscale: Cronbach's α=.90.

Finally, a third EFA was conducted employing only the benign and toxic disinhibition variables (see Table 17). With the exclusion of the neutral disinhibition variables, the results are much more clear-cut. All of the variables have high loadings (>.700) in their respective factors, indicating a good fit. Furthermore, commonalities are small and the highest secondary loading was only .104 for one of the benign disinhibition variables.

4.12.2 Confirmatory factor analysis

For a statistically more rigorous test, the nine variable, three factor (benign, neutral and toxic) model and the six variable (benign and toxic), two factor model were subjected to CFA. Although the data showed no kurtosis or skewness issues, diagonally weighted least squares (DWLS) was chosen as the estimator, as it is preferred for categorical and ordinal data (Mîndrilă 2010).

For the three factor model the chi-square was χ^2 = 222.839, df=24, p<.000 which already indicates a poor fit for the model. Although larger sample sizes almost always result in a significant chi-square (Hu and Bentler 1999, Jöreskog 1969, Kline 2011), the χ^2/df ratio (9.29 in this case) is out of the accepted range for an acceptable model (less than 5 can be considered for a good fit; Bollen 1989:272, Hoelter 1983). In contrast, the fit indices showed acceptable numbers. Tucker-Lewis index (TLI), comparative fit index (CFI), and root mean square error of approximation (RMSEA) were chosen in this case. Of the three, only one of the fit indices pointed toward an acceptable model: TLI=.983 (>.95 acceptable model fit, >.97

a good fit; Schermelleh-Engel et al. 2003)), CFI=.989 (>.95 acceptable model fit, >.97 a good fit; Schermelleh-Engel et al. 2003)), RMSEA=.059 (good model fit <.08, ideal model fit <.05; Browne and Cudeck 1993). Even with the relatively good fit indices, the model is clearly problematic.

Next, the two factor solution for benign and toxic disinhibition was examined. Contrary to the relatively poor fit of the three factor model, the two factor model showed an almost ideal fit. The chi-square was χ^2 = 19.449, df=8, *p*=.013 and while the chi-square was still significant, the χ^2/df ratio was a much lower 2.43 which is in the range for a good fit (Bollen 1989:272, Hoelter 1983). Furthermore, all the goodness of fit indices were well in range for an acceptable model: TLI=.997, CFI=.998, RMSEA=.025.

4.13 Discussion

As Suler (2004) hypothesized, the benign and toxic influences can easily mix, thus making the influence of online disinhibition not a straightforward black and white divide. Moreover, Study Three illustrated the ambiguity of the benign and toxic factors, as they both played a significant role in the case of cyberbullying. Therefore, a separate study was devised to advance the theory of online disinhibition and find out if a separate neutral factor exists besides the benign and toxic factors.

EFA analysis showed that separating the neutral factor in online disinhibition was impossible. This confirms the concerns Suler (2004) expressed when explaining the theory of online disinhibition. Depending on the case, the neutral dimension can be conflated with benign or toxic online disinhibition depending on the variable. Leaving the neutral variables and combining them with either benign or toxic factors also showed problems. Here again the commonalities were too high and thus they were dropped from further analysis. The final model that included three benign and three toxic items showed the best results. The

separation of both latent variables was very clear. These results were corroborated by conducting CFA, supporting the final two factor solution and showing an ideal fit for the theoretical model.

4.14 Limitations

Some limitations of this study must be taken into account. First, although the sample size was large, it was comprised of a panel of Internet users. Thus these results are representative only of the population who use the Internet. Second, the current study employed a self-report design, which by default can introduce a bias in the respondents.

4.15 Summary

Research around the world, as well as the results from previous chapters in the dissertation, have tried to explain online deviant behavior employing theories from sociology, criminology, and psychology among other fields. Unfortunately, no existing theory has tried to encompass all the aspects of cyberspace. This chapter addressed this issue by developing the Online Disinhibition Scale (ODS). Study Three dealt with the development of the ODS, specifically focusing on cyberbullying. The sample in the study included 887 high school students (mean age 16.31). Exploratory factor analysis (EFA) yielded two factors subsequently named "benign disinhibition" and "toxic disinhibition," which were afterwards subjected to a confirmatory factor analysis (CFA) showing an acceptable model fit for the two factor solution. Logistic regression analyses showed that online disinhibition was significantly associated with cyberbullying. The results indicate that, although online and offline deviant behavior overlap, as was shown in Studies One and Two, cyberspace exercises a certain influence in individuals. The ODS proved to be a better predictor of cyberdeviance than the traditional theories of deviant behavior examined in Study Two. Addressing the ambiguity of benign and toxic disinhibition, Study Four introduced a neutral factor in the equation. That is

to say, is there a possible neutral dimension besides the proposed benign and toxic factors? Employing an online panel sample of 2,347 (50.8% females) adult respondents aged been 20–59, EFA showed that it is impossible to separate the neutral factor. Models with a three factor solution showed a poor fit. The final scale, named the Revised Online Disinhibition Scale (RODS) and consisting of six items, measures only the benign and toxic factors, and is recommended for future research.

CHAPTER FIVE – PSYCHOLOGICAL AND SOCIAL FACTORS AS PREDICTORS OF ONLINE AND OFFLINE DEVIANT BEHAVIOR AMONG ADOLESCENTS (STUDY FIVE)

The first chapter of this dissertation illustrated how deviance has changed and evolved since the emergence of the Internet. With the rise of cyberdeviance, traditional theories of deviant behavior are not as well equipped to predict these newer behaviors in cyberspace. In the second chapter we saw how diverse and ubiquitous various deviant behaviors can, be with only 5% of respondents answering negatively to 25 items measuring deviance. Most importantly, Study One showed that there is a moderate overlap between online and offline deviance. Study Two compared these deviant behaviors across borders, concluding that they are not specific to one country, and mostly explained within countries. Moreover, it showed that traditional theories of deviance can be significant predictors of cyberdeviance, albeit with some limitations. What's more, Study Two reaffirmed the findings from Study One, demonstrating a significant correlation between all of the online and offline deviance items.

To address the unexplained variance of cyberdeviance, which is most likely the part that doesn't overlap with offline deviance, Chapter Four proposed two new scales to measure online disinhibition: the Online Disinhibition Scale (ODS) and the Revised Online Disinhibition Scale (RODS). The ODS explained 15–30% of the variances in cyberbullying, which was better than the performance of traditional theories in Study Two. However, the ODS had an unresolved issue: a possible neutral factor of online disinhibition. Thus, the RODS was developed. Study Four concluded that a clear-cut separation of benign and toxic disinhibition works best. This study (Study Five) will build on all the findings from previous studies to investigate the second research question of this dissertation and analyze the predictors of cyberdeviance. Moreover, this study will be the first test of the RODS. Does

online disinhibition apply to cyberdeviance in general, not just cyberbullying? Finally, will online disinhibition retain its significance when proxies for other sociological and criminological theories are included in the equation?

5.1 Holistic Approaches to Studying Deviance

As it was noted in Chapter One, the study of deviance has not ceased. On the contrary, there are increasingly more publications that study zoophilia, pedophiles, gangs, addicts, punks, *bugchasers*,[3] cyberbullying, and hackers, among many others. Furthermore, the number of books and research articles, that contain "deviance" or "deviant" in their titles, have also risen since the turn of the century (Goode 2014:19). Because of definitional problems, scholars have been less enthusiastic about clumping some of these behaviors together and have mostly focused only on a particular phenomenon. However, when it comes to acts of deviance, quantitative studies, employing deviance and delinquency scales, have shown good statistical reliability (Bennett and Robinson 2000, Cretacci et al. 2009, Fukushima et al. 2009, Fukushima Tedor 2014, Moffitt 1989, Rogers et al. 2006a, Vazsonyi et al. 2001, Vazsonyi and Pickering 2003, Vazsonyi et al. 2004). Research among the adolescent population can be broadly divided into two categories: peer deviance (e.g., bullying) and general deviance (e.g., alcohol consumption).

A large body of literature deals with delinquency, which has been closely tied to crime and studies in criminology. Delinquency describes a range of behaviors, mostly concentrating on those that are in direct conflict with the law. Some researchers have divided it into risky behavior and serious delinquency to illustrate a difference of degree (Booth, Farrell and Varano 2008), although it is clear that both categories are part of deviant behavior. Research in this area has stemmed from a long tradition of crime and deviance studies. The most

[3]Bugchasers are those who seek sexual relations with HIV-positive individuals in order to contract the disease.

notable theories in the field are the following: social disorganization (Sampson and Groves 1989), which later evolved into collective efficacy (Sampson et al. 1997); social bonds theory (Hirschi 1969), which Hirschi himself abandoned as he moved towards self-control as the sole explanation for crime and delinquency (Gottfredson and Hirschi 1990); and interactionist theories that accept the fluid nature of deviance and focus on circumstances and labeling (Becker 1963, Denegri-Knott 2005). All of these theories have proved useful in explaining delinquency. However, they all focus on a particular aspect or aspects of social life, without acknowledging possible disinhibiting influences in cyberspace.

A second category of research, that has received a lot attention and combines a number of deviant behaviors, is bullying. Since the 1970s society has become increasingly aware of the problems that bullying causes among adolescents, prompting scholars to delve into the issue and try to find remedies, or at least improve the situation. Bullying research, like delinquency, has a long tradition and a number of theoretical frameworks have been developed. Theoretical frameworks covering ethological, ecological and socioecological, and cognitive and social-cognitive approaches have been applied to the study of bullying with varying degrees of success (Liu and Graves 2011). Bullying has been recognized as a problem, which cannot be completely eradicated, but efforts for improvement abound (Hymel and Swearer 2015).

With the emergence of the Internet at least two new categories can be added to the two already mentioned. First, forms of peer deviance and bullying through ICTs have come to be known as cyberbullying (alternatively written as “cyber-bullying” or “cyber bullying”), and research in this area has increased exponentially in the past ten years. The biggest problem plaguing this emerging field of inquiry has been a lack of consensus about a definition. This is understandable, if we take into account the novelty of the field and the rapid changes in technology. As with traditional bullying, researchers studying cyberbullying have applied a

number of theories to explain the phenomenon: theory of planned behavior (Heirman and Walrave 2012), general strain theory (Jang et al. 2014), and moral disengagement among others (Pornari and Wood 2010).

Second, general deviance in cyberspace includes hacking, illegal downloads, pornography, trolling, and aggression (e.g., flaming). It could be argued that instances from this category of deviance have affected society the most: large hacks and thefts of private data from millions of users, sharing and downloading of movies and music, and a broader discussion of privacy and government surveillance. The issue of cybersecurity especially has garnered a lot of attention (Nelson 2014). As with the previous three groups, researchers have employed theories from various branches of social science to analyze these behaviors. Apart from sociology, most studies are conducted within criminology and criminal justice disciplines because of the illegal nature of deviance in this category. Most common approaches include social learning theory (Hinduja and Ingram 2009), self-control (Bossler and Burruss 2011), and rational choice theory (Higgins 2007).[4]

To date very few scholars have tried to explore categories of online and offline in a single study. Among the few exceptions are Yun, Kim and Kwon (2015), who used self-control theory to predict delinquency, as well as Internet and smartphone addiction. Using one item from each subscale of the original self-control scale, they found significant associations with all the dependent variables. The authors contend that their Korean adolescent sample is no different from the Western samples used in other studies (Yun et al. 2015). However, they do note that culture can play a role, and other studies on Chinese adolescents have proven that self-control loses its significance when social learning and bonding variables are entered in the model (Cheung and Cheung 2008, Cretacci et al. 2009). On the other hand, a study on

[4] Rational choice theory or rational action theory is based on the premise of a benefit and cost comparison. If the former exceeds the latter, the chances for committing a particular action are higher.

Japanese undergraduate students has shown that self-control is a robust predictor for most delinquency items (Vazsonyi et al. 2004). The lack of competing theories in Vazsonyi et al. (2004) study could explain the strong results of self-control theory. How much and whether culture is important in studying deviant behavior in Asian countries, is a question that needs more scholarly attention.

Kim and Kim (2015) employed a longitudinal approach with a Korean adolescent sample and measured delinquency, as well as cyberdeviance. The items for cyberdeviance were using unauthorized Internet ID, disguising one's gender or age online, and insulting someone in chatrooms or on bulletin boards. The focus of the study was to use respondents' responses on the delinquency items to predict online deviance. Lower self-control and higher levels of delinquency, and associating with peers who exhibit problematic behavior, were all significant predictors of three cyberdeviance items. The parent-child relationship was not important at all, while parental monitoring significantly predicted two of the three cyberdeviance items (Kim and Kim 2015). However, a longitudinal study using the same data source (Korean Youth Panel Survey) did find a significant influence of parental attachment on reducing cyberdeviance (Kong and Lim 2012). It is possible that the cross-sectional nature of the former study limited and biased the results. The studies presented above offer a mixture of contradicting arguments. On one hand, the collectivistic culture and close family ties should have an impact on adolescent deviant behavior, but this is only partially supported. For cyberdeviance, the role of parental attachment is still an open question. That being said, the discussion of earlier studies lends some support for culture-free self-control theory as a predictor of offline deviance.

Holt, Turner and Exum (2014) compared individual and neighborhood factors for victimization, which included cyber-victimization, too. While not a study on offending, their findings revealed neighborhood disorder as a significant influence on offline and online

victimization among middle school students (Holt et al. 2014). Because of the necessity of technology for cyber-victimization, the authors interpret their results as evidence that the "digital divide" is just a social artefact. It would seem that access to ubiquitous technology is reaching new levels, increasingly a daily necessity for most. Whether the results stay the same in other less developed countries, or even other parts of United States where the sample was taken, remains to be seen.

5.2 Purpose of the Study

Holistic studies of deviance are rare and far between. Up to now scholars have mostly selected only certain aspects of personality or looked at the family or peers alone. Furthermore, no study has incorporated models that analyze online and offline deviance simultaneously. As Studies One and Two already revealed, there is a relatively large overlap between the two categories. A combination of traditional theories of deviance and the Revised Online Disinhibition Scale will allow a comparison of the two approaches. Combining all these factors in one model will make it possible to simultaneously analyze the separate influence of each factor, while controlling for others, and see how they associate with each other.

Thus, the principal purpose of this study is to find out which factors contribute to cyberdeviance the most and advance our current understanding of deviant behavior. To achieve this goal, online and offline deviance scales will be combined into one model. Furthermore, in light of the findings in Studies Two and Three, the following hypotheses will be examined.

1. It was hypothesized that toxic online disinhibition will be a significant predictor of cyberdeviance, but will have no significance for offline deviance.
2. Benign online disinhibition will be a negative predictor of cyberdeviance.

3. Based on previous research and results from Study Three, it was hypothesized that family, peer, school, and neighborhood attachment, will be stronger associations with offline deviance compared to cyberdeviance.
4. Attitudes towards violence and self-control will be significant predictors of online and offline deviance.

5.3 Methods

5.3.1 Participants

A total of 862 questionnaires were distributed in four schools in Osaka, Japan. Fifty-nine responses were excluded from the analysis due to being incomplete (93.2% completion rate).[5] The final sample included 803 senior high school students: 326 males (40.6%), 476 females (59.3%), and 1 not specified (0.1%) aged between 15 and 18 years old (M=16.36, SD=.94; two cases not specified). All schools in the survey had two classes in each grade participate, making the final distribution of students in the first through third year as follows: 34.6%, 34.9% and 30.5% respectively. The participant schools were not chosen randomly making the data a convenience sample. The main reason for refusal to participate was due to the sensitivity of the questions in the questionnaire. However, the final sample included schools with different academic levels. One school could be categorized as elite, two were above average, while one was at the bottom of academic achievement. The survey for this study was conducted July through September 2015.

5.3.2 Measures

Risk-taking was measured using the respective subscale from the self-control scale (Grasmick et al. 1993), which is comprised of 3 items: “I like to test myself every now and

[5] Questionnaires with more than 20% of missing values and questionnaires with more than seven out of the total of thirteen scales having only one number as the chosen answer were deemed invalid and excluded from the final sample.

then by doing something a little risky," "Sometimes I will take a risk just for the fun of it," "Excitement and adventure are more important to me than security." Reliability analysis showed a good fit: Cronbach's α=.87; M=4.34; SD=2.58. The usage of only one subscale instead of the full self-control scale composed of six components is supported by previous findings; in some cases the subscales alone were better predictors of deviance that the full scale (Piquero and Rosay 1998).

Next, attitudes towards violence scale (Cronbach's α=.79; M=3.13; SD=2.81) was measured with five items: "A bit of violence is part of the fun," "One needs to make use of force to be respected," "If somebody attacks me, I will hit him/her back," "Without violence everything would be much more boring," "It is completely normal that boys want to prove themselves in physical fights with others" (Wilmers et al. 2002). Since the last item in the scale addressed only attitudes toward male behavior, separate Cronbach's α were calculated for each gender to confirm the scale's reliability. The analysis showed satisfactory results in both subsamples (males: Cronbach's α=.77; M=4.30; SD=2.97; females: Cronbach's α=.75; M=2.33; SD=2.38), supporting the use of the combined sample in statistical analysis.

The benign online disinhibition subscale (Cronbach's α=.75; M=3.76; SD=2.45) and the toxic online disinhibition subscale (Cronbach's α=.84; M=2.07; SD=2.29) were adapted from the previous chapter. The subscales showed good reliability and thus were used as stand-alone scales to investigate the separate influences of benign and toxic online disinhibition. Each scale consisted of three items: "On the Internet it is easier to open myself up to someone I have just met," "On the Internet it is easier to talk openly about my worries or troubles," and "On the Internet it is easier to compliment or show affection to others without feeling shy" for benign online disinhibition and "On the Internet it is easier to annoy or disturb someone I don't like," "On the Internet it is easier to blame or criticize someone without fear of revenge

or repercussions," and "On the Internet it is easier to ridicule or make fun of someone" for toxic online disinhibition.

Originally three items measuring loneliness were included in the proposed model (questions 18.4–18.6 in Appendix 2), but were dropped due to the complexity of the full model as the sample was too small to support it.

Parental attachment (Cronbach's α=.89; M=12.65; SD=4.29) and peer attachment scales (Cronbach's α=.88; M=13.81; SD=3.68) were adapted from the Inventory of Parent and Peer Attachment or IPPA (Armsden and Greenberg 1987). The scales included such items as "My friends encourage me to talk about my difficulties" and "I tell my parents about my problems and troubles" among others. The item "I feel my parents are good parents" was not included in the original IPPA, but was adapted in this study, mirroring the peer item "I feel my friends are good friends," which was in the original scale. The item "I feel alone or apart when I am with my friends" for peer attachment was not included in the final scale, because it was the last item in the list and stated in reverse, which resulted in many respondents mistakenly marking the lowest answer. This in turn affected the scale reliability and biased the analysis. The full list of items used in this study can be seen in Appendix 2.

School attachment scale (Cronbach's α=.74; M=6.03; SD=2.15) was adapted from the school bonding scale used in the ISRD-2 study (Lucia, Killias and Junger-Tas 2012). One of the scale items (20.4 in Appendix 2), measuring extracurricular activities at school, was dropped in order to increase the reliability of the scale. The low reliability of the item can be explained by the education system: high schools in Japan provide a range of extracurricular activities, on average involving more than half of the students (Nishino and Larson 2003), which is different from most other school systems, and it makes the factor incongruent with other items in the scale. The final scale used in this study included the following three items: "If I

had to move I would miss my school," "Teachers do notice when I am doing well and let me know," and "I like my school."

Measures concerning neighborhood were taken from the ISRD-2 study (Junger-Tas, Steketee and Jonkman 2012). Neighborhood integration and neighborhood attachment scales showed very strong correlation (Pearson's r=.761, $p<.001$), therefore they were combined into one scale under the name "neighborhood attachment" (Cronbach's α=.90; M=7.36; SD=4.03). The scale was comprised of the following five items: "People around here are willing to help their neighbors," "This is a close-knit neighborhood," "People in this neighborhood can be trusted," "I like my neighborhood," and "If I had to move, I would miss the neighborhood." Neighborhood disorganization was not included in the final model as it showed lower reliability and overly complicated the final structural equation model.

The responses for all the scales measuring psychological and social properties ranged from "Fully disagree" and "Somewhat disagree" to "Somewhat agree" and "Fully agree" (coded as 0 – Fully disagree to 3 – Fully agree).

Online and offline deviant behavior was measured by a total of 30 variables.[6] These variables were divided into subgroups as follows: two scales for offline deviant behavior (general and peer) and three scales for online deviant behavior (general, peer and aggression). Offline general deviance was measured by 9 items (e.g., "Cheated on a test or an exam." See Appendix 2 for the full list of items). Offline peer deviance was measured with 3 items: "Tease about one's body or way of speaking," "Exclude or shun someone from circle of friends," and "Engage in physical fights with classmates." Afterwards these two scales were

[6] Originally there were 30 variables, but one school refused to include them in their questionnaires. It was deemed more useful to use all four schools with 25 variables, instead only three schools with the full set of variables. The removed variables concerned alcohol and drug use among others and thus were too sensitive for one of the schools.

summed up to create an overall metric measuring offline deviance (scores: 0–12; KR-20=.69; M=3.52; SD=2.22).

Online general deviance was measured by 5 items: "Downloaded pirated software (music, movies, games etc.)," "Uploaded or shared pirated software (music, movies, games etc.)," "Watched online material that was not age appropriate (e.g., pornography),"[7] "Hacking (accessed computer networks illegally or without permission)," and "Wrote insulting comments with the intent of provoking others." Online peer deviance was measured the following 4 items: "Uploaded/published a picture or video online without permission," "Spread messages containing insults or bad rumors among classmates or acquaintances," "On the Internet (social networking sites, text messages, email) insulted someone," and "On the Internet (social networking sites, text messages, email) excluded or shunned someone from circle of friends." For all the aforementioned scales the respondents were asked to think about the past 12 months and answer either affirmatively or negatively to each item (coded as 0=no experience and 1=experience). Next, online aggression scale was adapted from a study by Wright and Li (2012) to measure how often the target of online aggression are just innocent bystanders or victims. The scale had an introductory comment to the respondents explaining that their targets couldn't be the causes of their frustration or anger. Four items were included in the scale: "Left them out of an activity or conversation," "Spread bad rumors about them," "Ignored them," and "Posted mean or insulting things about them." In the Japanese translation each item specifically stated that these actions refer to the Internet. The items were measured on a 5 point Likert scale and ranged from "Never," "Almost never," and "Sometimes" to "Almost all the time" and "All the time." The items were collapsed, coded as

[7] As Study One showed, the gender differences in this item were large: 42.6% among males and 6.1% among females. To avoid introducing bias in the results, separate analysis was conducted without this item. The exclusion of the item slightly decreased the association between gender and cyberdeviance, but it did not affect other paths in the model. Thus, the item was included in the full model of this study.

either 0=no experience and 1=experience (all of the answers except “Never” were coded as 1), and then summed up. The items were dichotomized for the congruence of the overall deviance scale as the other subscales are all dichotomous, as well as for better internal consistency (Bendixen et al. 2003). Afterwards all the three online deviant behavior scales were summed up to create an overall metric measuring online deviance (scores: 0–13; KR-20=.79; M=1.74; SD=2.25). Almost half of the answers (44%) on the scale were zero, making it non-normally distributed with increased skewness (1.41) and kurtosis (4.54). Therefore, to better fit the data in the model and avoid non-normality, the scale was collapsed, and cyberdeviance was represented as a dichotomous variable (M=.56; SD=.50; coded as 0=no experience and 1=experience).

All scales were tested for multicollinearity and deemed appropriate for analysis. Age, gender (coded as 0=female and 1=male), the social desirability scale (M=6.32; SD=2.73; KR-20=.66), and academic achievement (at school level) were used as covariates in this study. Social desirability was measured by the short form of the Marlowe-Crowne Social Desirability Scale (MC-C), consisting of 13 items (Reynolds 1982). The values for the scale were calculated according to the established criteria, giving a point for each socially biased answer and then summing up those scores. Scores based on average student achievement in centralized exams were used as a dummy variable for each school. Finally, computer availability at home was entered separately as a covariate in the full model to test its influence. Computer access at home did not affect the overall results for the latent variables, and had no significant associations with either of the dependent variables. In order to avoid overfitting, i.e., using a statistical model with too many parameters for the sample size, it was excluded from the final analysis.

5.3.3 Procedure

The survey questionnaires were distributed in the classroom by the teacher in charge of the class or the teacher who was responsible for data collection at that particular school. Depending on the school, the purpose of the survey was explained to the whole school beforehand or only to the students participating in the survey. Students were told about the purpose of the study and informed of their right to not participate in the survey or to not answer any questions they would feel uncomfortable with. For those classes that participated, a 15–20 minute time allowance was given for filling out the questionnaires. Together with the questionnaires, each student also received an envelope. When a student completed the questionnaire, they were asked to enclose their questionnaire in the envelope and hand it back to the teacher in charge of the survey. These procedures and the questionnaire contents were approved by the Research Ethics Committee, Departments of Sociology and Anthropology, Graduate School of Human Sciences, Osaka University (application #2015011).

5.3.4 Data analyses

Structural equation modeling (SEM) was chosen as the most appropriate method for this study. SEM allows a combination of CFA and path analysis in one model. The advantage over summing up scales and separate path analysis is that SEM accounts for measurement error. Summing up scales and conducting an ordinary least squared regression assumes equal loadings for the factor and perfect reliability, thus biasing the estimates (Rubio and Gillespie 1995). Diagonally weighted least squares (DWLS) was chosen as the estimator method because of its applicability for categorical and ordinal data (Finney and DiStefano 2006, Mîndrilă 2010). As a rule of thumb, Likert scales with 5 or less items in their responses are treated as categorical data (Finney and DiStefano 2006).

The non-parametric test of homoscedasticity and the Hawkins test of normality and homoscedasticity revealed that missing values are not random at a significance level of $p<.05$,

which can theoretically be a problem for both pairwise and listwise methods.[8] After conducting SEM with both pairwise and listwise methods, the latter was chosen, because both models were almost identical. In such a case listwise method is preferred as it allows for more comparability within the model (Peugh and Enders 2004). All analyses were conducted in R (ver. 3.2.2). The significance level was set at $p<0.05$. Missing values analysis was conducted with the "MissMech" package (1.0.2), while for structural equation modelling "lavaan" package (0.5-19) was used.

5.4 Results

First, before conducting analysis with the full theoretical model, the measurement model was examined for goodness of fit. The measurement model performed exceptionally well, passing all the necessary thresholds for goodness of fit. The model chi-square was χ^2 = 977.549, df=499, $p<.001$ with the χ^2/df ratio of 1.96 being well in the acceptable range (<5 can be considered a good fit; Bollen 1989:272, Hoelter 1983), although more recent critics contend that researchers should dispense completely with the statistic (Kline 2011:204). In structural equation modeling an insignificant *p* value indicates a good fit (Hooper, Coughlan and Mullen 2008). However, larger samples almost always result in a significant chi-square, thus goodness of fit indices are used to evaluate the model (Hu and Bentler 1999, Jöreskog 1969, Kline 2011). The Jöreskog–Sörbom goodness-of-fit index (GFI), the Bentler comparative fit index (CFI), and root mean square error of approximation (RMSEA). All of the mentioned indices were supportive of an excellent fit: GFI=.992 (>.95 acceptable model fit; Hooper et al. 2008), CFI=0.995 (>.95 acceptable model fit, >.97 a good fit; Schermelleh-Engel et al. 2003)), RMSEA=.036 (good model fit <.08, ideal model fit <.05; Browne and Cudeck 1993).

[8]Listwise deletion method removes all cases with one or more missing values. Pairwise deletion method attempts to minimize loss of cases in analysis and uses all available data in each calculation.

Table 18. Summary of estimates for latent variables.

Latent variables	Unstandardized estimate	Standardized estimate	S.e.	Z-value	P
Benign disinhibition (ODSB)					
ODS1*	1.000	0.745			
ODS3	1.143	0.851	0.047	24.130	0.000
ODS5	0.935	0.696	0.041	22.745	0.000
Toxic disinhibition (ODST)					
ODS2	1.000	0.808			0.000
ODS4	1.097	0.886	0.033	33.555	0.000
ODS6	1.102	0.890	0.032	34.665	0.000
Attitudes towards violence (ATTV)					
ATTV1	1.000	0.829			
ATTV2	0.917	0.761	0.035	25.904	0.000
ATTV3	0.599	0.496	0.031	19.557	0.000
ATTV4	1.056	0.876	0.040	26.151	0.000
ATTV5	0.894	0.741	0.034	26.576	0.000
Low self-control (LSELF)					
LSELF1	1.000	0.836			
LSELF2	1.092	0.913	0.037	29.352	0.000
LSELF3	0.977	0.817	0.029	34.133	0.000
Parental attachment (PATT)					
PATT1	1.000	0.833			
PATT2	1.091	0.909	0.024	46.113	0.000
PATT3	1.053	0.877	0.022	48.264	0.000
PATT4	0.986	0.821	0.023	42.132	0.000
PATT5	0.992	0.827	0.023	42.327	0.000
PATT6	0.899	0.748	0.021	41.840	0.000
School attachment (SATT)					
SATT1	1.000	0.842			
SATT2	0.764	0.644	0.030	25.177	0.000
SATT3	1.034	0.871	0.042	24.588	0.000
Peer (friend) attachment (FRATT)					
FRATT1	1.000	0.860			
FRATT2	1.052	0.905	0.020	51.600	0.000
FRATT3	1.016	0.874	0.019	54.787	0.000
FRATT4	0.933	0.803	0.021	43.887	0.000
FRATT5	0.933	0.803	0.020	47.488	0.000
FRATT6	0.920	0.792	0.019	48.332	0.000
Neighborhood attachment (NHOOD)					
NHOOD1	1.000	0.869			
NHOOD2	0.991	0.860	0.019	52.999	0.000
NHOOD3	1.060	0.920	0.017	60.956	0.000
NHOOD4	1.059	0.920	0.017	61.858	0.000
NHOOD5	0.815	0.708	0.018	45.254	0.000

*Item numbers correspond to the order they were placed in the questionnaire; N=733.

After establishing the reliability of the measurement model, the full model was constructed. Regressions were added to the model, connecting all the latent variables to online and offline deviance measures. The best possible statistical fit was a model without any covariates. The

goodness-of-fit indices and other metrics were almost identical to the measurement model: χ^2 = 1014.856, df=551, p<.001 with the χ^2/df ratio of 1.84; GFI=.992; CFI=.995; and RMSEA=.034 (see Appendix 5 for a summary of unstandardized and standardized estimates, errors, Z-values, and significance). This model explained 38% of variance in cyberdeviance and 19% in offline deviance.

Table 19. Summary of regression coefficients.

	Unstandardized estimate	Standardized estimate	S.e.	Z-value	P
Offline deviance ~					
Benign online disinhibition	-0.092	-0.031	0.193	-0.477	0.633
Toxic online disinhibition	0.160	0.059	0.185	0.864	0.387
Attitudes towards violence	0.338	0.127	0.090	3.748	0.000
Low self-control	0.345	0.131	0.086	4.001	0.000
Parental attachment	-0.163	-0.062	0.062	-2.625	0.009
School attachment	0.044	0.017	0.107	0.414	0.679
Peer (friend) attachment	0.198	0.078	0.086	2.295	0.022
Neighborhood attachment	-0.212	-0.084	0.053	-3.970	0.000
Gender	0.806	0.180	0.147	5.486	0.000
Age	0.022	0.010	0.083	0.272	0.786
Social desirability	-0.310	-0.382	0.030	-10.354	0.000
Academic achievement	-0.025	-0.125	0.006	-3.996	0.000
Cyberdeviance ~					
Benign online disinhibition	0.024	0.015	0.116	0.207	0.836
Toxic online disinhibition	0.436	0.302	0.110	3.967	0.000
Attitudes towards violence	0.258	0.184	0.063	4.107	0.000
Low self-control	-0.024	-0.017	0.059	-0.413	0.680
Parental attachment	-0.100	-0.072	0.040	-2.476	0.013
School attachment	0.068	0.049	0.074	0.922	0.357
Peer (friend) attachment	-0.085	-0.063	0.060	-1.418	0.156
Neighborhood attachment	-0.025	-0.018	0.037	-0.661	0.509
Gender	0.763	0.322	0.101	7.518	0.000
Age	0.050	0.041	0.056	0.904	0.366
Social desirability	-0.144	-0.336	0.018	-7.909	0.000
Academic achievement	-0.022	-0.201	0.005	-4.651	0.000

N=733.

Next, with the inclusion of covariates, the final model was constructed (see Figure 2). Again, all the latent variables from the measurement model were connected to online and offline deviant behavior measures, but this time age, gender, the social desirability scale, and academic achievement were inserted as covariates.

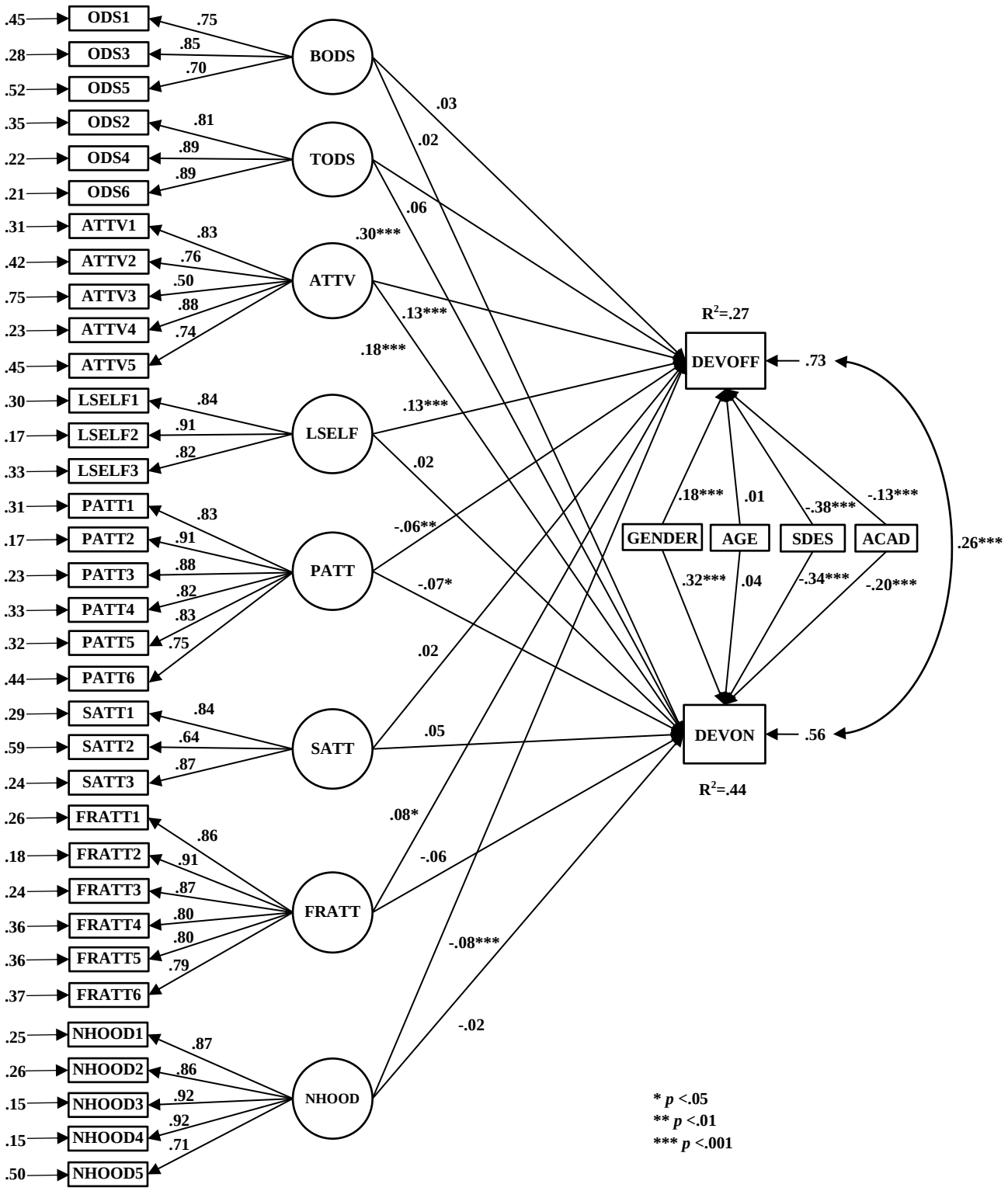

Figure 2. Structural equation model predicting online and offline deviant behavior.

The model fit was not as good as for the previous model, but this time it explained a larger proportion of variance in the dependent variables: 44% for cyberdeviance and 27% for offline deviance. The model chi-square was χ^2 = 2715.000, df=687, p<.001 with the χ^2/df ratio of 3.95, which again was in the acceptable range. Furthermore, the goodness-of-fit indices were in overall supportive of a good model: GFI=.968; CFI=.976; and RMSEA=.064. Summaries of unstandardized and standardized estimates, errors, Z-values, and significance are shown in Table 18 for latent variables and in Table 19 for regressions.

Figure 2 shows the final SEM model, where the online and offline deviant behavior measures are the dependent variables. All of the coefficients shown in the figure are standardized estimates. Values of standardized regressions coefficients <.10 are usually considered have a smaller effect, around .30 would be medium, and >.50 could be considered a large effect on the dependent variable (Kline 2011:185).

A look at all the latent variables in the model shows that the largest predictors for offline deviance were attitudes towards violence (β=.13)[9] and self-control (β=.13). Surprisingly, there was a positive association between peer attachment and offline deviance (β=.08), i.e., those respondents who had better relations with their peers were more likely to engage in deviant behavior. In contrast, parental attachment (β=-.06) and neighborhood attachment (β=-.08) were significant negative predictors.

A slightly different picture emerged, when examining the beta weights for cyberdeviance. This time toxic online disinhibition (β=.30) was clearly the largest predictor. It was followed by attitudes towards violence (β=.18), exhibiting a larger influence compared to offline deviance. The remaining latent variable that showed any significance was parental attachment (β=-.07), showing almost equally strong association as it had for offline deviance. In

[9] Standardized regression coefficients are also known as beta weights, and the Greek alphabet β is the standard notational symbol.

comparison to offline deviance, self-control, peer attachment, and neighborhood attachment had no significant associations with cyberdeviance. Benign online disinhibition and school attachment showed no significance for either of the dependent variables.

An examination of the covariates revealed that three of the four are significant predictors of both online and offline deviance. First, gender was a significant predictor of both online (β=.32) and offline (β=.18) deviant behavior. As expected, males were more likely to report engagement in deviant behavior. Second, social desirability was a significant predictor for online (β=-.34) and offline (β=-.38) deviance, but in this case negative. In other words, those respondents who scored lower on the social desirability scale, i.e., exhibited less bias towards socially desired answers, were significantly more likely to report deviant behavior. Third, academic achievement was negatively associated with both online (β=-.20) and offline (β=-.13) deviance. Age was the only covariate that had no significant associations with either of the dependent variables.

Finally, in order to test the robustness of the predictors, all non-significant paths were removed and a separate model constructed (see model details in Appendix 6). All predictors retained their significance, confirming the results of the full model.

5.5 Discussion

The fast pace of change in technology has influenced society in a number of ways: an increasing number of youths experience cyberbullying (Tokunaga 2010), hacking and cybersecurity threats are more common than ever (Nelson 2014), for the good or bad, file sharing and downloading have disrupted the entertainment industry (Cluley 2013), and a broader discussion of privacy, free speech and surveillance has entered the mainstream. The need for theoretical advancement and adolescent development concerning the Internet has been well established (Holt and Bossler 2014). Understanding the factors that influence and

predict cyberdeviance will help develop better policies and address these issues in a more constructive way.

The current study sought to incorporate individual and environmental level factors, as well as traditional deviant behavior theories and online disinhibition measures in one structural equation model to analyze their impact on online and offline deviant behavior. The principal question asked in this study was: which are the significant predictors of online and offline deviant behavior, when a number of competing theories, measuring individual and environment level variables, are included in a single model?

A closer look at the results in Fig. 2 shows that one of the strongest predictors among the latent variables for both online and offline deviance was attitudes towards violence. Being more accepting of violence clearly indicates a propensity for deviant behavior, regardless of the medium. Viewing aggression as more normative and favorable attitudes towards violence have already been linked to actual engagement in violence (Avci and GÜÇRay 2013, Gellman and Delucia-Waack 2006), as well as traditional and cyberbullying (Burton, Florell and Wygant 2013). Chapter Three also demonstrated the significance of this construct, albeit the effect on downloading and hacking was very small. This study indicates that one's attitudes play a very important role, more so than peer or parental relationships.

The importance of attitudes and normative beliefs is strengthened even more, as strongest predictor among the latent variables for cyberdeviance is toxic online disinhibition. These results corroborate Chapter Four findings, as well as previous research, strengthening the link between online disinhibition and behavior in cyberspace (Constantiou et al. 2011, Morahan-Martin and Schumacher 2000). The most important contribution of this study is that, utilizing SEM and analyzing online and offline deviance simultaneously, the unique effect of toxic

online disinhibition was confirmed. Toxic online disinhibition was the strongest predictor for cyberdeviance, but had no effect on offline deviance.

Benign online disinhibition did not show any statistically significant associations with deviant behavior. It seems that benign online disinhibition elicits an independent influence from its toxic counterpart, as there was no significant association with deviant behavior in online or offline settings. Research on the positive effects of online disinhibition is scarce, but the available evidence seems to suggest that the link between benign online disinhibition and prosocial behavior is weak to non-existent (Lapidot-Lefler and Barak 2015).

Self-control was only a significant predictor of offline deviance, while showing no effect for cyberdeviance. The majority of existing studies have mostly shown support for the theory in online and offline settings (e.g., Donner et al. 2014, Vazsonyi et al. 2004). However, one needs to take into account association with deviant peers and it interaction with low self-control. Research has shown that low self-control is mediated by offending peers, thus even those with less restraint might avoid engaging in cyberdeviance, if there is no deviant peer influence (Holt et al. 2012). Moreover, Higgins and Wilson (2006) found that the significance of deviant peers and low self-control disappears in their subsample with high morals. Unfortunately, this study did not directly ask, if engaging in cyberdeviance is morally wrong, but moral standards can be indirectly inferred from the toxic disinhibition scale. Scoring higher or lower on the scale shows how acceptable one finds insulting and disturbing behavior in cyberspace. Thus, it is possible toxic online disinhibition scores negated the significant effect of low self-control for cyberdeviance. Finally, the significance of low self-control for offline deviance supports previous studies, suggesting its culture-free application in non-western samples.

Parental attachment was a negative predictor only for both online and offline deviance, which supports the basic tenets of social control theory (Hirschi 1969). Existing literature mostly supports the significance of parental attachment (Carlson 2012, Higgins et al. 2008, Walden and Beran 2010), but there are exceptions to this trend (Booth et al. 2008). Studies on downloading reveal contradicting results: some found no significance for parental attachment (Moon, McCluskey, McCluskey et al. 2013), while others did (Kong and Lim 2012). The literature shows no consensus on the link between parental attachment and deviant behavior, which means that there is a need for future studies in this area.

Results for peer attachment were counter-intuitive: better relationships with peers were associated with more engagement in offline deviance. Contradicting the results from this study, Burton et al. (2013) employed the full 25 item peer attachment scale from the IPPA (Inventory of Parent and Peer Attachment); and their findings revealed that middle school students, who were not involved in traditional bullying or cyberbullying, had better relationships with their peers. On the other hand, research on aggression has shown how being more popular, having more friends, and social dominance at school can lead to more deviant behavior (Garandeau, Ahn and Rodkin 2011, Jonkmann, Trautwein and Ludtke 2009, Perren and Alsaker 2006), partially explaining the counter-intuitive result in this study. Moreover, this study corroborates previous findings by Fukushima et al. (2009), who found that peer attachment had a positive effect on self-reported deviance among Japanese college students. The evidence seems to suggest that peer relations can go both ways depending on the circumstances. Thus, any results should be interpreted with caution.

In comparison to offline deviance, peer attachment had no impact on cyberdeviance at all. As Burton et al. (2013) showed, cyberbullies had worse peer relationships than their non-involved peers. However, their analysis was relatively simple and just confirmed a significant difference in group means. This study utilized SEM and a number of covariates, which could

explain the non-significant results for cyberdeviance. On the other hand, the pervasive online communication which can be seen among adolescents dominates their lives. Manago, Taylor and Greenfield (2012) have already shown that online communication is increasingly becoming an ever more important facet of our lives, and it is no less important than face-to-face communication. Furthermore, adolescents mostly use social networking to connect with known others (Reich et al. 2012) and online media usage enhances existing relationships (Tang 2010). Taking into account the strong influence of peer relations during adolescence, it is not too difficult to see how they could shape one's behavior online.

The results in this study confirm the importance of neighborhood for engagement in deviant behavior. Higher attachment to neighborhood was a significant negative predictor of offline deviance, but had not effect on cyberdeviance. Previous studies have already shown the relevance of neighborhood when it comes to offline deviance (Haynie et al. 2006, Herrenkohl et al. 2000, Sampson et al. 1997). However, no other study has tried to link it to cyberdeviance. Adler and Adler (2008) argue that with the decline of civic engagement and neighborhood communities, we can see these being replaced by virtually constructed communities in cyberspace. Are neighborhoods and one's physical surroundings becoming less important? In comparison, if someone spends more time in cyberspace than in real life, neighborhood attachment and relationships with people living in the vicinity would theoretically become less and less important. This study shows that neighborhood is important only for predicting offline deviance. However, online victimization has been linked to neighborhood disorganization (Holt et al. 2014). Taking into account the correlation between online and offline deviance, future studies, exploring the link between cyberdeviance and neighborhood, might reveal contradicting results.

School attachment was one of the two latent variables with no significance in predicting either of the dependent deviant behavior variables. The debate about school attachment and

its relation to deviant behavior is inconclusive: some studies have found no significant associations there (Cernkovich and Giordano 1992). However, including the results from Chapter Three, others report the contrary (Cretacci et al. 2009, Dornbusch et al. 2001, Wiatrowski et al. 1981). Most of the previous inquiries into this connection did not use a number of competing theories as was done in this study. Thus, the available results seem to suggest that school attachment might not be as important as some would like to suggest.

Next, a look at the covariates in the model reveals that, unsurprisingly, males are significantly more likely to engage in online and offline deviance. Not counting the social desirability scale, gender was the strongest predictor of cyberdeviance and offline deviance. There has been an inconclusive debate about whether females are disproportionally victimized online (Tokunaga 2010), while males are more likely to be the perpetrators (Bauman 2013). Studies have consistently shown that males are more likely to engage in sexual cyber dating abuse (Zweig, Dank, Yahner et al. 2013), computer crime (Marcum, Higgins, Ricketts et al. 2014, Moon et al. 2013), cyber stalking (Menard and Pincus 2012), and hold favorable attitudes and engage in digital piracy (Gunter et al. 2010, Morris and Higgins 2010). However, in the same study, where Zweig et al. (2013) found that males are more likely to commit sexual cyber dating abuse, females exceeded males in non-sexual abuse perpetration. Moreover, in the case of software piracy gender differences disappear, when social learning theory and self-control variables are added (Higgins 2006). The available evidence in this study corroborates the majority of the aforementioned findings, arguing that males are more likely than females to engage in deviant behavior.

The second covariate in the study, a short form of the social desirability scale, turned out to be the biggest predictor of both online and offline deviance. This by itself was expected, but did it influence other variables in the model? The model with the best fit (see Appendix 5), which incidentally was without any covariates, showed similar results to the final model. The

only exception was peer attachment, its results being affected greatly by the addition of covariates. A separate SEM model, with the inclusion of gender, age, and academic achievement as covariates, revealed that the inclusion of the social desirability scale in the final model affected the results for peer attachment. In the SEM model with the other three covariates peer attachment had no significant associations with either online or offline deviance. These findings demonstrate the variability of results, with or without the control for socially biased answers. It stands as a reminder that results from self-report questionnaires should be interpreted with caution. A review by van de Mortel (2008), examining social desirability usage in studies, showed that almost half were impacted by the incorporation of some kind of a social desirability measure in analysis. Studies on deviant behavior usually mention this lack of control for bias in their limitations, but, clearly, what they should be doing, is actually implementing these measures in their analysis. This would make the results more trustworthy and possibly limit the contradictory results that can be found in the field at the moment.

Third, academic achievement at school level was the last covariate used in the model. The findings clearly indicated that students at lower performing schools are more likely to engage in both online and offline deviance. These results corroborate the results from Chapter Two, where the worst performing school had the highest prevalence rates of deviance for 20 of the 25 items included in the questionnaire. Garandeau et al. (2011) analyzed how student attitudes towards studying affect aggression levels and acceptance. Their findings indicate that in more academically oriented classes aggressive students were more disliked and aggression seen as a goal disrupting nuisance. Students at the lower ranked Japanese high schools evidently spend less time studying and preparing for exams, and are less likely to advance to a four year university than their peers. Therefore, it is likely that this decrease in

the pursuit of academic goals, or commitment to social norms and institutions, as Hirschi (1969) would describe it, could lead to more deviant behavior.

Summarizing the results, the final model explained 27% variance in offline deviance, while for cyberdeviance it was 44 percent. Evidently, traditional theories coupled with online disinhibition measures have produced better results than Study Two or Study Three. While online disinhibition had no significance for offline deviance, the toxic online disinhibition factor was by far the strongest predictor of cyberdeviance among the latent variables. Finally, some of the most widely applied theories, such as the low self-control theory, had no significance at all in predicting cyberdeviance. The implications of these findings, as well as those from Studies One, Two, Three, and Four will be discussed in the next chapter.

5.6 Limitations

This study employed the same sample that was used for analysis in Study One. Besides the limitations already mentioned Study One, there are two other points that need to be taken into account. First, although previous research has indicated that gendered studies of delinquency are important, as they produce varying results depending on gender, the sample in this study was too small for such analysis (Booth et al. 2008). Based on the *N:q* hypothesis proposed by Jackson (2003), where *N* is the number of cases and *q* is the number parameters requiring statistical estimates, he suggests a ratio of 20:1 for SEM. However, Kline (2011:12) contends that a ratio of 10:1 is still acceptable, but 5:1 would produce unreliable results. Thus, in this utilizing the full sample with listwise deletion, there were 733 cases and 58 parameters, i.e., the *N:q* ratio is 12.6, which is still acceptable. However, a gendered analysis would require breaking this rule. Second, a small number of variables had to be dropped from the final SEM because of the sample size, complexity of the model, or reliability issues with the scales themselves.

5.7 Summary

The study of deviant behavior tends to be fragmented. Very few scholars have tried to combine various deviant behaviors that include online and offline environments in a single study. Furthermore, depending on the phenomenon studied, researchers arbitrarily apply theoretical constructs, without the possibility of comparing competing theories. What's more, social desirability is rarely addressed in quantitative studies, usually resulting in a small footnote or acknowledgement in the limitations of the study. Although these practices are widely accepted, they can lead to false results and contradictions in the scientific literature. This study analyzed deviant behavior among high school students, incorporating a wide range of questions about online and offline deviance. Moreover, the study included a social desirability measure and a number of prominent theories from such fields as sociology, criminology and psychology utilized the study of deviance. Employing structural equation modelling, this study revealed the importance of both factors: psychological and social. The data yielded by this study provides convincing evidence that one's normative beliefs or the psychological factor are more important when it comes to deviant behavior. Attitudes towards violence, low self-control, and peer attachment very positively associated with offline deviance, while parental attachment and neighborhood attachment had negative associations. For cyberdeviance, toxic online disinhibition and attitudes towards violence were positive predictors, while parental attachment had a negative association. Students from schools with lower academic achievement and males were more likely to engage in both online and offline deviance. Finally, social desirability was shown to slightly influence the results, proving its relevance, and as hypothesized, less biased students reported more deviant behavior. Overall, traditional theories of deviant behavior performed better in predicting offline deviance, while the newly developed Revised Online Disinhibition scale was the strongest predictor for cyberdeviance.

CHAPTER SIX – THE STUDY OF DEVIANT BEHAVIOR: IMPLICATIONS OF THIS DISSERTATION, CONCLUSIONS, AND THE FUTURE OF THE SOCIOLOGY OF DEVIANCE

This dissertation set out to investigate the nature and characteristics of deviant behavior among adolescents. To date very few studies have tried to explore deviant behavior in such a holistic way as this study; and no such study has included a Japanese sample. The aim of this dissertation was to broaden our knowledge of deviant behavior, focusing specifically on cyberdeviance. Conducting five different studies, two principal research questions were addressed: is there an online–offline overlap for deviant behavior and what are the predictors of cyberdeviance? Four of the five studies conducted included only Japanese respondents, while Study Three employed a cross-national sample consisting of 30 countries. Here the studies will be summarized and their results discussed in relation to methodological approach, limitations, and implications for future research.

6.1 Summary of the Five Studies

Study One highlighted the diversity and ubiquity of deviant behavior with 95% of the sample admitting at least one of the 25 deviance items. Cyberdeviance was considerably less frequent than offline deviance among adolescents. Schools with lower academic achievement exhibited more deviant behavior among its students. Males admitted higher rates of engagement in deviance than females. Correlation of online and offline deviance scales revealed a moderate overlap (Pearson's r=.43).

Study Two analyzed downloading and hacking across 30 countries from around the world. Most of the variance explained in the regression models was within the countries, showing that cyberdeviance is relatively uniform across different regions around the world. With the exception of family leisure, low self-control, attitudes towards violence, parental attachment

and control, and school and neighborhood measures were all significant predictors of cyberdeviance. Having said that, these traditional theories of deviant behavior explained only 10% and 11% of variance in downloading and hacking, indicating that their use in cyberdeviance research is limited.

Study Three set out to develop a new scale to measure online disinhibition and address the unique nature of cyberdeviance. The scale was based on a theoretical framework encompassing dissociative anonymity, invisibility, asynchronicity, solipsistic introjection, dissociative imagination, and minimization of authority (Suler 2004). The newly developed scale – the Online Disinhibition Scale – was successfully applied to cyberbullying and showed promising results, explaining 15–30% of variance in cyberbullying. Exploratory and confirmatory factor analysis revealed clearly defined benign and toxic disinhibition factors. However, the association of the benign and toxic factors with cyberbullying was more ambiguous and the relationship not as straightforward. As hypothesized, toxic online disinhibition was significantly associated with cyberbullying. Although statistically having a much smaller effect, benign online disinhibition too was a significant predictor of cyberbullying in one of the models.

Study Four was addressed the ambiguous nature of online disinhibition based on the results yielded in Study Three. Analyzing data from an online panel survey, revealed how tricky it can be to measure online disinhibition. The study confirmed that it is impossible to measure the neutral influence of online disinhibition, and a clear benign–toxic divide works best. The result was the development of the Revised Online Disinhibition Scale, which included three benign and three toxic disinhibition items.

Study Five built on the findings from all the previous chapters and addressed deviant behavior by combining traditional theories of deviant behavior and The Revised Online

Disinhibition Scale in one model. By explaining 44% of the variance in cyberdeviance, this combination of theories led to better results than Study Two or Study Three. As was hypothesized, toxic online disinhibition was a significant predictor only for cyberdeviance. This is a crucial finding and it lends support to those who purport that online communication is intrinsically different from face-to-face communication and possibly influenced by online disinhibition. Clarifying the results from Study Four, Study Five found no significant association, positive or negative, between benign online disinhibition and cyberdeviance. Overall results of Study Five showed that individual factors and attitudes are more important than ecological factors in the case of cyberdeviance.

6.2 Predictors of Cyberdeviance and Potential Implications of this Research

The main purpose of this dissertation was to find out which factors contribute most to cyberdeviance. The final model in Study Five revealed that toxic online disinhibition, attitudes towards violence, and parental attachment were significant predictors of cyberdeviance. In comparison, attitudes towards violence, low self-control, parental attachment, peer attachment, and neighborhood attachment were significant predictors for offline deviance. Furthermore, among the covariates, gender, academic achievement, and social desirability were significant predictors of both online and offline deviance.

These results showed that some of the significant predictors are unique only to offline deviance, while others only for cyberdeviance or both. Four of the predictors were unique either to cyberdeviance or offline deviance, with only two being associated with both dependent variables. On these grounds, we can argue that predictors for cyberdeviance are distinct from offline deviance, as there were more differences than similarities. The main difference here is that individual level constructs such as attitudes and norms were stronger predictors of cyberdeviance, while social factors, such as peer or neighborhood attachment,

were better predictors for offline deviance. Furthermore, the relative strength of individual level predictors was much higher than contextual or social constructs. While for offline deviance this difference was smaller, the gap in predicting cyberdeviance was much larger. This corroborates delinquency and offending research showing that aggregate level factors, such as the neighborhood you live in, have little influence in predicting deviance (Elliott, Wilson, Huizinga et al. 1996, Oberwittler 2004, Simcha-Fagan and Schwartz 1986). All of these approaches are affected by a number of methodological limitations, as well as possible confounding factors that might influence analysis.

Firstly, the influence of neighborhood might be hard to determine, i.e., not all adolescents might be affected by the immediate surroundings of their homes, especially if they spend most of their time at schools that are far away from their place of residence. Controlling for this would be economically and physically painstaking, and it would introduce another layer of self-report data.

Secondly, why individual factors such as online disinhibition are more relevant in explaining cyberdeviance can be found in the intrinsic nature of cyberdeviance itself. Downloading or hacking is usually a lonesome affair, involving smaller groups or a single individual. Study Two confirmed these assertions: the last time the respondents engaged in downloading and hacking, they did it alone 65.5% and 62.7% of the time. By contrast, only 7.1% of those who engaged in drinking alcohol and 14.4% of those who engaged in vandalism did it on their own.

A key limitation to Study Two was that not all of the major theories were tested. As was noted in Chapter One, social learning theory and general strain theory are one of the most widely used approaches to predict deviant behavior. The two limitations for this were the absence of these theories in the ISRD-2 data that were utilized in Study Two, which led to the

usage of similar measures Study Five. Moreover, the latter study had a relatively small sample. Although the use of social learning theory and general strain theory in predicting cyberdeviance might be limited, future studies should analyze them in conjunction with online disinhibition to determine if they retain their significance. Study Five demonstrated that the low self-control theory retained its significance only for offline deviance in the full model, which contradicted the majority of studies in the field (Donner et al. 2014, Higgins 2005, Holt et al. 2012). On the other hand, just the addition of social learning theory in some cases can nullify the influence of self-control as other studies have shown (Bossler and Burruss 2011). Thus, the Revised Online Disinhibition Scale (RODS) could work as a control variable to weed out theories that are not applicable to cyberdeviance.

One of the two latent variables with significant links to both online and offline deviance was parental attachment. The importance of parental attachment concerning delinquency and offline deviance has been established (Carlson 2012, Chapple 2003, Henrich, Brookmeyer and Shahar 2005), but the connection between parental attachment and cyberdeviance is less clear. Study Five provided some evidence that parental attachment can work as a deterrent for cyberdeviance as well. Is it parental control and filtering systems, the example parents set or the upbringing and moral values they teach to their children? Finding out which of these particular factors contribute most to predicting cyberdeviance would help the parents themselves, and maybe discourage some of the adolescents from engaging in cyberdeviance. Future studies would benefit greatly from surveying or interviewing parents alongside adolescents in order to see how exactly good parenting can deter cyberdeviance.

Lastly, on the basis of the evidence yielded in this dissertation, it seems fair to suggest that there is a significant overlap between online and offline deviance. Studies One and Two clearly showed that there is a significant correlation between the two dimensions. However, correlations among specific deviant behaviors varied. With this in mind, it would be

reasonable to suggest that, where those behaviors overlap, the traditional theories, such as the low self-control theory, are going to work best. Therefore, one of the most important objectives is to investigate which online and offline behaviors tend to correlate most. Knowing more about how and why some deviant behaviors overlap in the real world and cyberspace, would enable researchers to apply existing theories to greater effectiveness. Research on bullying and cyberbullying has already showed that there is a possible overlap of the two categories (Jang et al. 2014, Juvonen and Gross 2008, Raskauskas and Stoltz 2007, Vazsonyi et al. 2012). Moreover, this was corroborated in Study One, showing that subscales of deviance in the same category (e.g., bullying) show higher correlations between online and offline dimensions as cross category correlations.

6.3 Deviance and Online Disinhibition

The final model in Study Five explained 44% of the variance in cyberdeviance, toxic online disinhibition subscale of the RODS being the strongest predictor (covariates not counted). Compared to the results in Study Two, the increase in explained variance is more than double. In comparison, this increase is around 50% based on the average explained variance in Study Three, where the Online Disinhibition Scale (ODS) was utilized.

This dissertation seems to validate the view that behavior in cyberspace has a distinct dimension from face-to-face behavior. However, the proponents of the application of traditional theories of deviant behavior to cyberdeviance also have something to contribute. Based on the results of Study Five, I would argue that the application of traditional theories of deviance and online disinhibition doesn’t have to be mutually exclusive. One key question, which this dissertation cannot answer, is: do the traditional theories of deviance predict cyberdeviance because they are genuinely predictive, or their significance can be explained

by the partial correlation of online–offline deviance? By contrast, online disinhibition was exclusively linked to cyberdeviance.

For some respondents the offline and cyberspace might be separate, i.e., there is an effect of online disinhibition they will engage in more deviance. On the other hand, some others will be affected by online disinhibition, but not engage in cyberdeviance. The same would be true for those, who are not affected by online disinhibition. One group will engage in cyberdeviance, another only in offline deviance, while some would engage in both or none.

The next step for future studies to untangle this situation would be to conduct experiments and first establish who is affected by online disinhibition and who is not. What would be the critical point, where someone is counted as being affected by online disinhibition or not? Does online disinhibition change over time, or is it stable? Most importantly, a study showing why some individuals are affected by online disinhibition, while others are not, would be a large step forward. Once these facts are established, then and only then, a separate study on each group would be able to shed light on which other factors besides online disinhibition are associated with cyberdeviance. Notwithstanding these pending issues, the results in this dissertation provide confirmatory evidence that online disinhibition measures are applicable to the study of cyberdeviance.

6.4 Deviance across Borders

One of the most notable limitations to this dissertation is the lack of a qualitative component. Based on the results from Study Two, the data appear to suggest that cyberdeviance (in this case downloading and hacking) is relatively similar across borders, although some countries do exhibit more deviance than others. However, analysis of country origin in Study Two revealed that it explained only 8% of variance in downloading and 3% in hacking. Most of the results in this study are based on Japanese adolescents. Can and should these results be

generalized to adolescents in other countries? Does Japan fit in the overall trend of deviance around the world, or is it an outlier?

To address these questions, six different scatterplots were generated (see Figures 3–8). Downloading and hacking, in conjunction with fighting, alcohol consumption, and computer access at home were compared across all the countries from Study Two and Japan (data from Study One). A key aspect to keep in mind, when comparing both samples, is the differences between the respondents: ISRD-2 survey consisted of seventh, eighth, and ninth graders (91.5% of respondents aged 12–15), while the Japanese adolescents were senior high school students attending grades 9–12 (87.8% of respondents aged 15–17). Downloading, hacking and computer access were measured the same way in both studies with similar wording. However, questions concerning fighting and alcohol consumption slightly differed.[10] Nevertheless, this cross-national comparison offers a unique opportunity to investigate the online–offline overlap of deviance, and see how Japanese adolescents compare to their peers in other countries.

On an international level, Japanese adolescents seem to be less involved in deviant behavior than their peers in other countries. The most notable aspect of the scatterplots is that Japan has the second lowest rate for downloading, hacking, and fighting behaviors, with only Suriname scoring lower. Surprisingly, it also ranks very low for computer access at home (see Figures 5 and 8). Only Venezuela, Armenia, and Suriname rank lower. Japan is a relatively rich country compared to the average of other countries in the ISRD-2 study, thus

[10] Study Two items (12 month time frame): "Engaged in physical fights with classmates" and "Drank alcohol." Only three of the four schools (A, B, and C) are used to compare alcohol consumption frequencies, as school D refused to include this item in the questionnaire. ISRD-2 questions: "Did you ever participate in a group fight on the school playground, a football stadium, the streets or in any public place?" and with a follow up question inquiring about the past 12 months. ISRD-2 study had two questions (4 week time frame) for alcohol consumption, differing between stronger (e.g., spirits) and weaker alcohol (e.g., beer). Frequencies from the follow up question inquiring about the past 4 weeks of the latter ("Did you ever drink beer, breezers or wine?") are used in the scatterplot.

one would expect higher percentage in this aspect. One possible explanation is that reports and essays required by schools are still written mostly by hand, thus negating the need for a computer or a laptop at home. Lastly, Japanese students rank the lowest in alcohol consumption (see Figures 4 and 7). However, these numbers should be taken with a grain of salt, as a countrywide survey in 2010 by Japan's Ministry of Health, Labour and Welfare showed that 17.9% of males and 17.6% of females in grades 10–12 (8.9% and 9.4% of grade 7–9 students) had had alcohol in the past month (Ouida 2012). Yet, even these statistics would rank on the low end of the spectrum, when compared to other adolescents around the world. It seems that deviance patterns among Japanese adolescents are similar to the levels of crime, which are one of the lowest in the world among the industrialized nations (Bouten, Goudriaan and Nieuwbeerta 2002).

Research on American youth from different ethnic backgrounds and self-reported delinquency has shown that the link between the two is weak (Le and Stockdale 2005). Fukushima et al. (2009) compared Japanese and American college student, applying Hirschi's social bonds theory. Hirschi's theory was applicable to both countries, but its explanatory power was very low. Furthermore, contrary to their hypothesis based on individualism–collectivism differences between the two countries, their findings revealed that Japanese students actually are less strongly bonded to the conventional society, even though they exhibit much lower levels of deviance (Fukushima et al. 2009). In conclusion, Fukushima et al. (2009) attribute greater Japanese students' compliance to social norms as the best explanation for the lower levels of deviance compared to their American counterparts.

All things considered, culture seems to play only a limited role in explaining deviance across borders. On the basis of this evidence, it would be fair to suggest that, although Japanese adolescents engage in less deviance than their peers around the world, the reasons for engaging in deviance are likely to be similar to other countries.

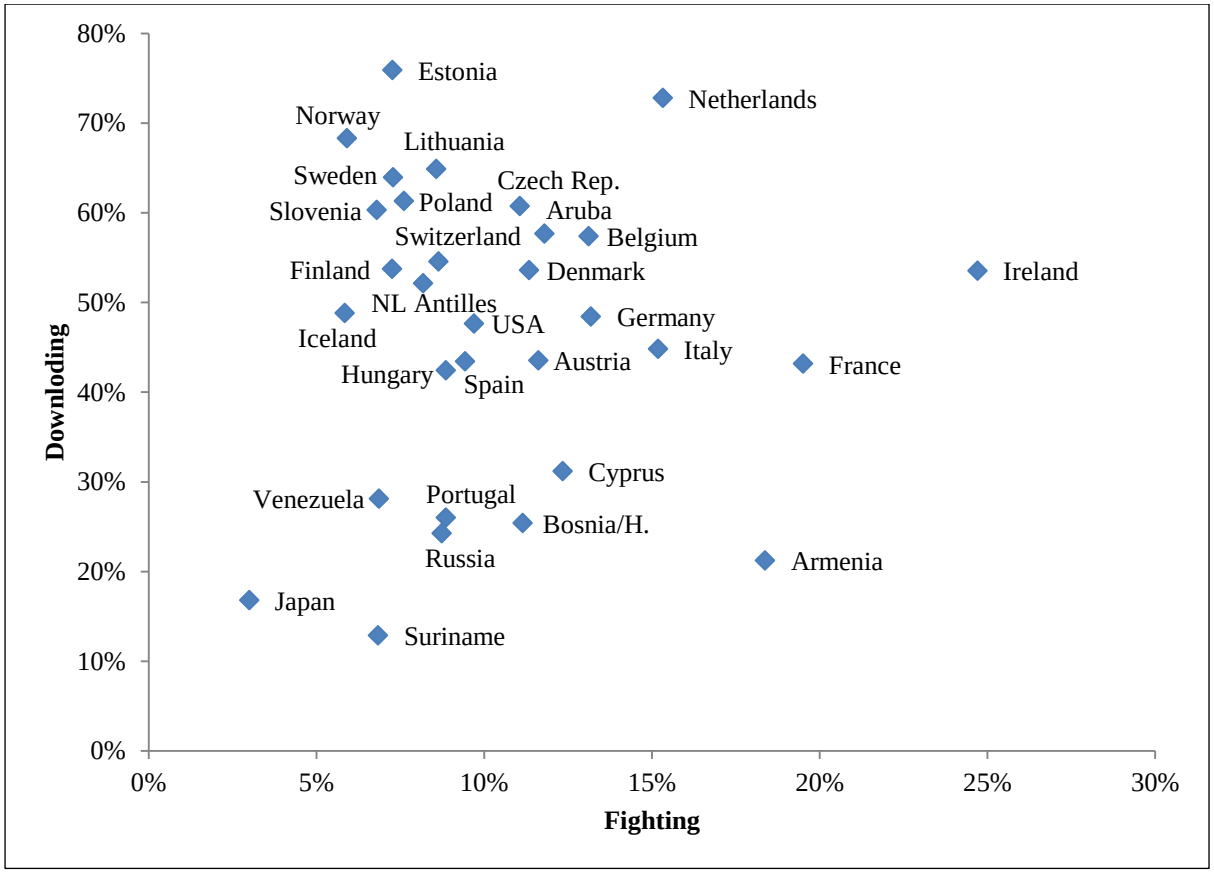

Figure 3. Cross-national comparison of downloading and fighting.

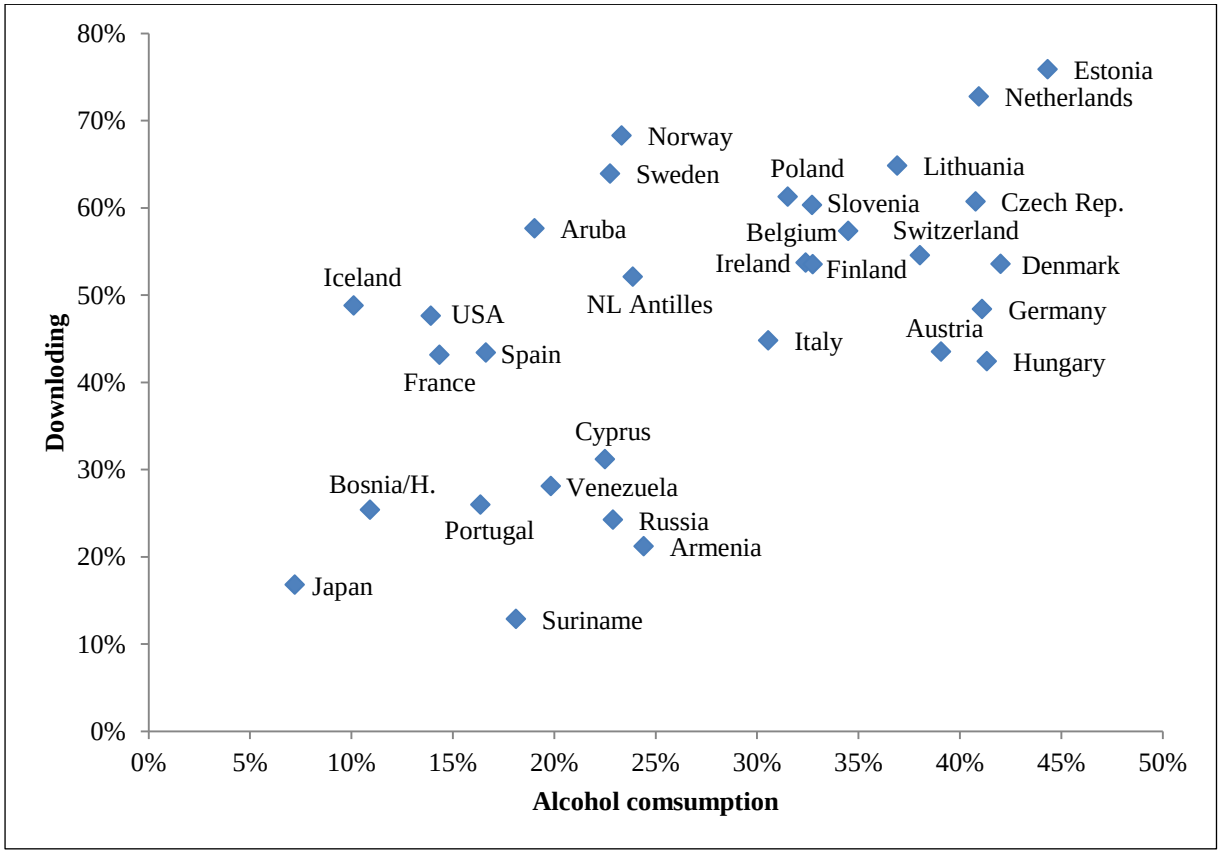

Figure 4. Cross-national comparison of downloading and alcohol consumption.

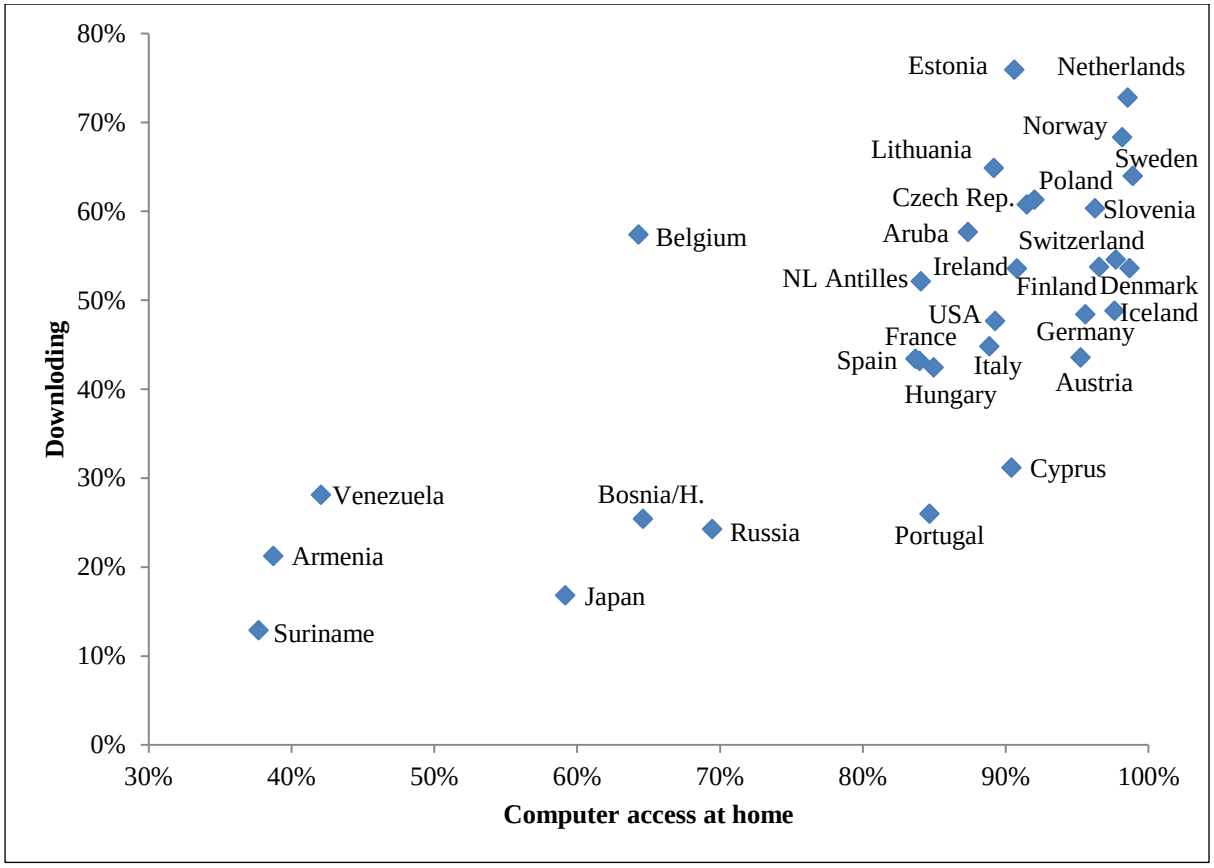

Figure 5. Cross-national comparison of downloading and computer access at home.

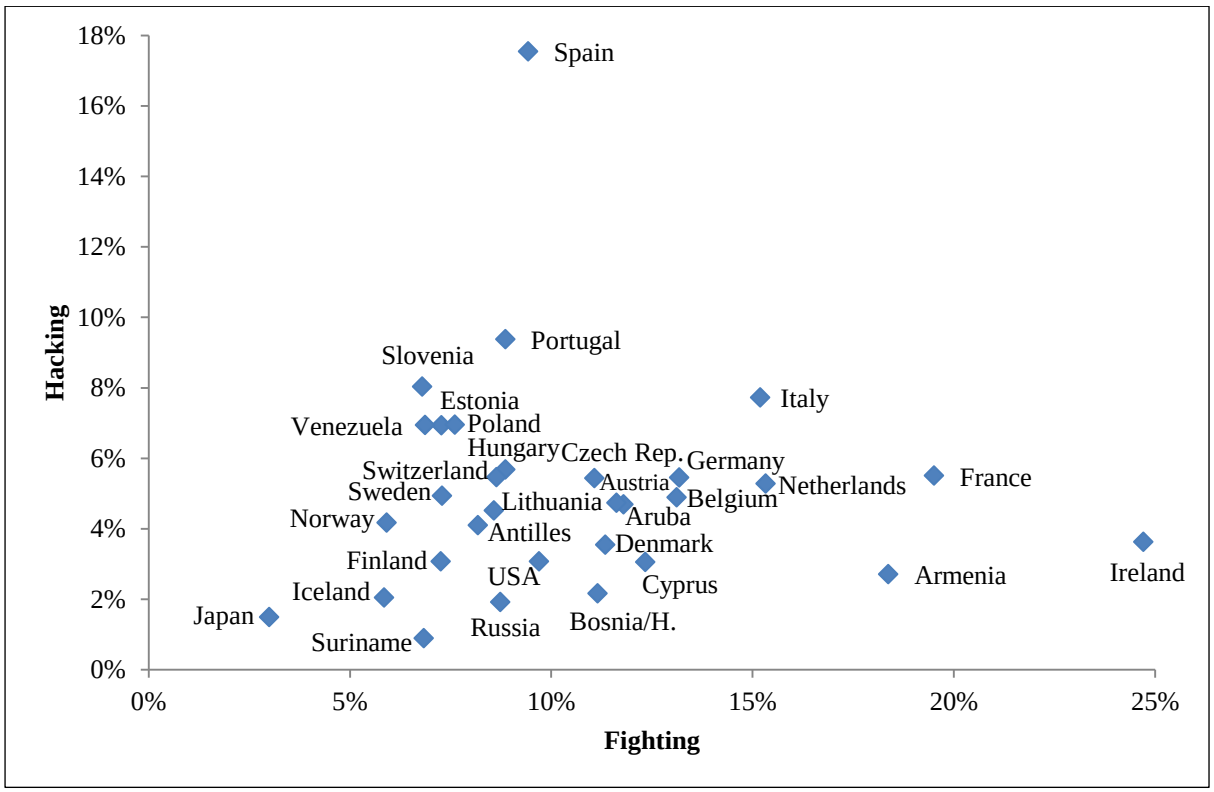

Figure 6. Cross-national comparison of hacking and fighting.

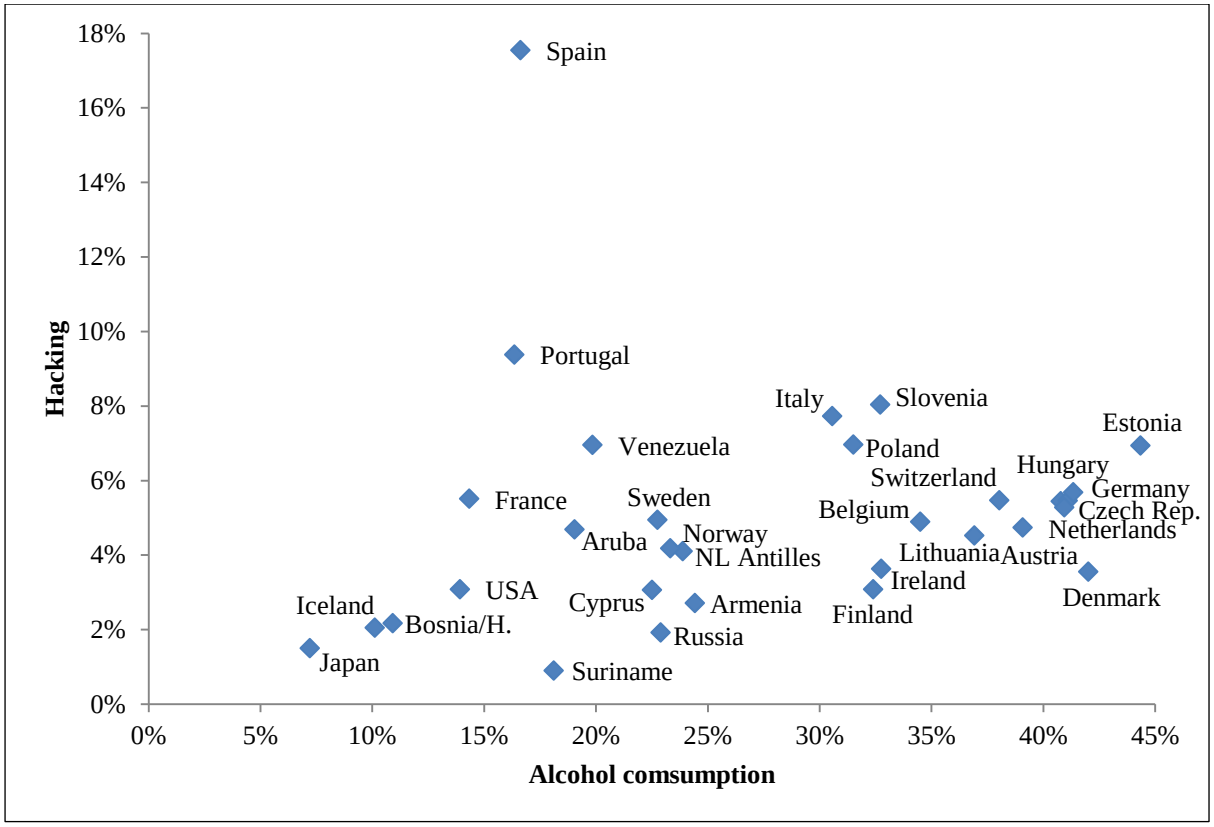

Figure 7. Cross-national comparison of hacking and alcohol consumption.

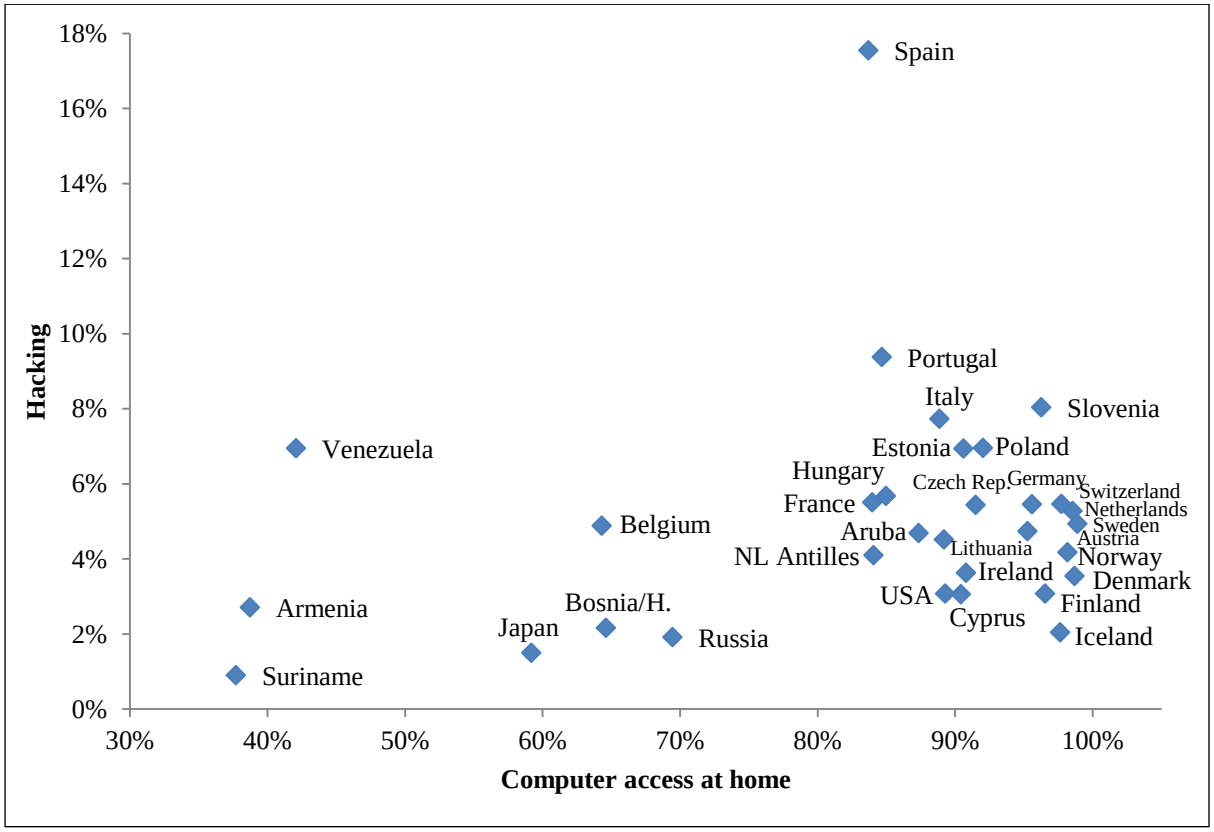

Figure 8. Cross-national comparison of hacking and computer access at home.

6.5 The Sociology of Deviance

The study of deviant behavior in sociology has gone through various phases. First, it started with strictly defined statistical definitions and determinism. There was a clear distinction of what is considered deviant and what is not. From there onward the focus gradually moved on to constructionism which is grounded in subjectivity. Power struggles, class, and subculture came into play. Defining deviance became a matter of the standpoint one takes. The action of an actor was judged by the audience, which in turn determined the "deviantness" of it. Finally, reaching the point of saturation and endless ambiguity in postmodernism, the study of deviance for many scholars led back to a more nuanced positivism and explanatory theories. By focusing on acts of deviance (e.g., theft), not conditions (e.g., disability) researchers advocating the explanatory approach argue that there is an intrinsic difference between a deviant and a non-deviant act. Thus, there must be something different between those who engage and those who do not engage in such acts (Goode 2015).

Clearly, without positivism in studies of deviance, it would be impossible to use the results for amending laws and creating policies. On the other hand, we want to be sure that these changes make sense and are in agreement with what is best for the society at large. Previous studies, as well as this dissertation, have attempted to measure deviant behavior using various instruments. In both cases the application of statistical analysis supports the view that there is some commonality between the various acts of deviance. On these grounds, we can argue that, in the case of deviant acts, explanatory research makes sense and is useful in predicting such behavior.

One of the difficulties with explanatory research is the need to combine items into scales. However, according the literature review in Chapter One and results in this dissertation, the reliability of such scales in most cases is applicable to statistical analysis. Research has

shown that deviant or risky behavior is a good predictor of more serious delinquency and crime (Junger-Tas 1989). Furthermore, an inclusion of less serious misdemeanors, i.e., deviant behavior leads to better response rates and validity of measures, especially in countries with lower levels of delinquency such as Switzerland (Vazsonyi et al. 2001). The problem with skewed scales measuring deviance is not new (Cretacci et al. 2009). The measure for cyberdeviance was dichotomized in Study Five for this particular reason. Thus, in order to establish the seriousness of deviance items and building a reliable instrument, a pilot study is necessary.

One of the limitations in this dissertation was the lack of a qualitative component. Researchers have recognized that in their extreme cases the quantitative and qualitative methods, largely associated with positivism and phenomenology, are not compatible, and the best strategy is to combine these techniques (van de Vijver and Chasiotis 2010). This is especially important for deviance and crime (Goode 2015). One way to address the traps of positivism in deviance research would be to start with constructionist and qualitative studies in order to determine how certain groups of the society view deviant behavior. Furthermore, quantitative research should not only measure certain behaviors, but at the same time inquire about the acceptability of those behaviors among the respondents. This approach would allow scholars to look for differences and similarities of how and why some people consider a certain act deviant or not. Only then we can move on to explanatory research. Do people who acknowledge their act as deviant engage in it less? Does it depend on the degree of the seriousness of the deviant act?

In conclusion, the available evidence seems to suggest that sociology of deviance has mostly overcome the definitional and theoretical issues it had in the past. Since the turn of the 21st century sociology of deviance has seen an increasing number of works are published and theoretical advances made. Nevertheless, the constructionism and positivism dichotomy is far

from being completely solved. One of the biggest obstacles is the fluidity of the concept of deviance. The rapid changes in societal norms and technology affect how and what is viewed as deviant.

6.6 Strengths of Methodology

First, an important advantage in this study is the inclusion of a social desirability measure in Studies One and Five. Both studies confirmed the bias that self-report questionnaires suffer from, especially when dealing with sensitive questions. The ability to control for socially desired responses influenced the final results in Study Five, lending to the credibility of the study.

Second, all of the studies employed large samples fit for quantitative data analysis. Study Two employed an international sample comprised of 30 countries and 68,507 participants. Study Four included an online panel comprised of 2,400 respondents. Study Three included 941 high school students, while Studies One and Five had 862 participating students.

Third, for the development of the Revised Online Disinhibition Scale, Study Three employed a large sample of Japanese Internet users aged 20–59 years. The data showed that the scale works well both will adults, as well as adolescents.

Fourth, this is the first study to investigate cyberdeviance, as well as offline deviance among Japanese adolescents. Furthermore, the study contributes to the existing research of deviant behavior, which is mostly dominated by studies in Europe and North America.

6.7 Limitations of Methodology

First, although the study included large and diverse samples, all of them were quantitative. In order to get a fuller picture of how deviance is viewed and operationalized, a qualitative study

is indispensable. Ideally, future studies should combine both approaches in order to yield the best results.

Second, Studies One, Four, and Five were all based on convenience samples. Moreover, a number of schools refused to participate in the survey due to the sensitivity of the questionnaire items. This can theoretically result in a biased sample. However, all of these studies included schools with different academic levels, countering this bias at least to a certain extent.

Third, changes in technology are so rapid that the results from this study for cyberdeviance have their historical limits. Thus, these findings should be interpreted in the context of the timeframe they were conducted.

6.8 Conclusions

The purpose of this dissertation was to investigate deviant behavior among adolescents in Japan and around the world. An examination of the history of the study of deviance in sociology revealed an uneven path with upheavals and times of glory alike. While some definitional issues of studying deviance have to be acknowledged, its applicability in contemporary research is appropriate and can be seen by the number of publications and articles published in the past decade. The biggest change in deviance was marked by the rise of cyberspace and advances in technology. As this dissertation showed, there is a partial overlap between online and offline deviance. Next, traditional theories of deviance were applied to study cyberdeviance, however, their use was limited. Taking into account the unique characteristics of cyberspace, a new approach was taken to address this distinct part cyberdeviance in the online–offline overlap. For this purpose two scales to measure online disinhibition were developed. These scales proved useful in predicting cyberdeviance and performed better than the traditional theories of deviance. Lastly, a combination of traditional

theories of deviant behavior and measures of online disinhibition yielded the best results in explaining the variance in cyberdeviance. It is the aspiration of the author that this study serves as a guide for a better understanding of deviant behavior and generates more scholarly inquiries into the issue.

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APPENDIX 1: JAPANESE QUESTIONNAIRE FOR STUDY ONE AND STUDY FIVE

Q6　あなたの友だちとの関係について、あてはまるところに１つだけ○をしてください。

1. よい　2. まあよい　3. あまりよくない　4. よくない

Q7　あなたがいっしょに住んでいる大人の男性（お父さん・義父）との関係について、おうかがいします。あてはまるところに１つだけ○をしてください。

1. よい　2. まあよい　3. あまりよくない　4. よくない
5. いっしょに住んでいない（単身赴任など）　6. そういう大人はいない

Q8　あなたは、いっしょに住んでいる大人の男性（お父さん・義父）と、映画、散歩やハイキング、親戚（しんせき）の訪問、スポーツのイベント等に、どれくらいの頻度で行きますか？

1. 週に２回以上　2. 週に１回くらい　3. 月に１回くらい　4. 年に数回くらい
5. 年に１回くらい　6. ほとんどない　7. そういう大人はいない・いっしょに住んでいない(単身赴任など)

Q9　あなたは、いっしょに住んでいる大人の男性（お父さん・義父）と週に何回夕食を食べますか？

1. まったく食べない　2. １回　3. ２回　4. ３回　5. ４回
6. ５～６回　7. 毎日　8. そういう大人はいない・いっしょに住んでいない(単身赴任など)

Q10　あなたがいっしょに住んでいる大人の女性（お母さん・義母）との関係について、おうかがいします。あてはまるところに１つだけ○をしてください。

1. よい　2. まあよい　3. あまりよくない　4. よくない
5. いっしょに住んでいない（単身赴任など）　6. そういう大人はいない

Q11　あなたは、いっしょに住んでいる大人の女性（お母さん・義母）と、映画、散歩やハイキング、親戚（しんせき）の訪問、スポーツのイベント等に、どれくらいの頻度で行きますか？

1. 週に２回以上　2. 週に１回くらい　3. 月に１回くらい　4. 年に数回くらい
5. 年に１回くらい　6. ほとんどない　7. そういう大人はいない・いっしょに住んでいない(単身赴任など)

Q12　あなたは、いっしょに住んでいる大人の女性（お母さん・義母）と週に何回夕食を食べますか？

1. まったく食べない　2. １回　3. ２回　4. ３回　5. ４回
6. ５～６回　7. 毎日　8. そういう大人はいない・いっしょに住んでいない(単身赴任など)

Q13　あなたはご自宅に、自分の部屋をもっていますか？　1. はい　2. いいえ

Q14　あなたはご自宅に、自分が使えるパソコンをもっていますか？　1. はい　2. いいえ

Q15　高校卒業後、親からすすめられている進路は何ですか？　１つだけ○をしてください。

1. 大学への進学　2. 専門学校への進学　3. 就職
4. その他（具体的に：　　）　5. 何も言われていない・そういう話はしない

Q16　あなたの親（もしくは保護者）について、おうかがいします。次の a)～f)にあげることは、どのくらいあてはまりますか？（1つずつ○）

	あてはまる	まあまああてはまる	あまりあてはまらない	あてはまらない
a)　私の親は、何でも気軽に相談にのってくれる	1	2	3	4
b)　何か困ったことや問題があったときには、親に相談する	1	2	3	4
c)　悩みごとがあるときには、親の意見を聞きたいと思う	1	2	3	4
d)　私の親は、いい親だと思う	1	2	3	4
e)　親はありのままの私を受けいれてくれる	1	2	3	4
f)　私が何か怒っているとき、親は理解しようとしてくれる	1	2	3	4

Q17　次の a)～f)にあげることは、あなたにどのくらいあてはまりますか？（1つずつ○）

	あてはまる	まあまああてはまる	あまりあてはまらない	あてはまらない
a）ネットでは、新しく知り合った人とも打ちとけた関係をつくりやすい	1	2	3	4
b）ネットでは、嫌いな相手を困らせたり、いやがらせしたりしやすい	1	2	3	4
c）ネットでは、気軽に悩みや心配ごとを打ちあけやすい	1	2	3	4
d）ネットでは、しかえしを恐れずに、だれかを非難したり批判したりしやすい	1	2	3	4
e）ネットでは、すなおに相手をほめたり好意を伝えたりしやすい	1	2	3	4
f）ネットでは、相手をバカにしたりするようなことでも書きやすい	1	2	3	4

Q18　次の a)～j)にあげることは、あなたにどのくらいあてはまりますか？（1つずつ○）

	あてはまる	まあまああてはまる	あまりあてはまらない	あてはまらない
a）たまには何かリスクのあることをして自分を試したい	1	2	3	4
b）楽しむためなら、時にはリスクがあってもかまわない	1	2	3	4
c）安全でいるよりも、興奮したり冒険することの方が私には重要だ	1	2	3	4
d）私は人とのつきあいが少ない	1	2	3	4
e）私には頼りにできる人がいない	1	2	3	4
f）私はまわりの人たちとうまくいっている	1	2	3	4
g）じっとしているのが苦手だ	1	2	3	4
h）何かを始めても、最後までやり通すのは苦手だ	1	2	3	4
i）よく考えずに行動するタイプだ	1	2	3	4
j）トラブルが起きないように自制するのは、私には大変なことだ	1	2	3	4

Q19　若者の暴力行動について、次のような意見があります。a)～e)のような意見について、あなたはそう思いますか、思いませんか？（1つずつ○）

	そう思う	そう思うまあ	そう思わないあまり	そう思わない
a）少しくらいの暴力であれば楽しみのうちだ	1	2	3	4
b）人から認められるには、力を使う必要がある	1	2	3	4
c）もしだれかが自分を攻撃してきたら、やりかえす	1	2	3	4
d）暴力がまったくなければ退屈だ	1	2	3	4
e）男がケンカをして自分の強さを証明することは当然のことだ	1	2	3	4

Q20　あなたの学校について、おうかがいします。次のa)～d)にあげることは、どのくらいあてはまりますか？　（1つずつ○）

	あてはまる	あてはまるまあ	あてはまらないあまり	あてはまらない
a）もし転校することになったら、今の学校を離れるのはさみしい	1	2	3	4
b）学校でうまくやれたとき、先生はそれに気づいてほめてくれる	1	2	3	4
c）私は学校が好きだ	1	2	3	4
d）学校内で、授業以外に参加している活動がある（部活動など）	1	2	3	4

Q21　次のa)～n)にあげることは、あなたにどのくらいあてはまりますか？（1つずつ○）

	あてはまる	あてはまるまあ	いえないどちらとも	あてはまらないあまり	あてはまらない
a）まわりの人たちが幸せだと、自分も幸せだ	1	2	3	4	5
b）家族が喜ぶことなら、やりたくなくてもする	1	2	3	4	5
c）私は多くの面で、他の人とは違う個性をもっている	1	2	3	4	5
d）何かに取り組むときには、他の人との競争があった方がいい	1	2	3	4	5
e）同級生が幸せなことは、自分にとって大切なことだ	1	2	3	4	5
f）仲間のためなら、自分の利益を犠牲にしてもいい	1	2	3	4	5
g）他の人を気にせず、自分のやりたいことをする方だ	1	2	3	4	5
h）競争することは自然なことだ	1	2	3	4	5
i）もし同級生が何か賞をもらったら、自分も誇りに感じる	1	2	3	4	5
j）親が何か賞をもらったら、子どもはそのことを名誉に思うべきだ	1	2	3	4	5
k）自分は特別な人間だと思う	1	2	3	4	5
l）競争がなければ良い社会はできない	1	2	3	4	5
m）他人と協力すると気分がいい	1	2	3	4	5
n）自分がやりたいことでも、もし家族から反対されたらあきらめる	1	2	3	4	5

Q22　あなたの友だちについて、おうかがいします。次の a)～g)にあげることは、どのくらいあてはまりますか？（１つずつ○）

	あてはまる	あてはまるまあ	あてはまらないあまり	あてはまらない
a）私の友だちは、何でも気軽に相談にのってくれる	1	2	3	4
b）何か困ったことや問題があったときには、友だちに相談する	1	2	3	4
c）悩みごとがあるときには、友だちの意見を聞きたいと思う	1	2	3	4
d）私の友だちは、いい友だちだと思う	1	2	3	4
e）友だちはありのままの私を受けいれてくれる	1	2	3	4
f）私が何か怒っているとき、友だちは理解しようとしてくれる	1	2	3	4
g）友だちといるときでも、孤独や距離を感じる	1	2	3	4

Q23　最近の**１年間**のことを考えてみてください。あなたは、次の a)～ g）のようなことを**した**ことがありますか？（１つずつ○）

a）身体のことや言葉づかいのことでからかう	1. ある	2. ない
b）おしゃべりや遊びの仲間にいれない	1. ある	2. ない
c）ほかの生徒となぐりあいのけんかをする	1. ある	2. ない
d）勝手に写真やビデオを撮って、ネット上やメールで流す	1. ある	2. ない
e）悪口やいやなうわさをメールや LINE などで同級生や知り合いに流す	1. ある	2. ない
f）ネット上（SNS や掲示板、ブログなど）に悪口やいやがらせを書く	1. ある	2. ない
g）ネット上（LINE やメール、ソーシャルゲームなど）でのやりとりの仲間にいれない	1. ある	2. ない

Q24　あなたのご近所のことについて、おうかがいします。次の a)～h)にあげることは、どのくらいあてはまりますか？（１つずつ○）

	あてはまる	あてはまるまあ	あてはまらないあまり	あてはまらない
a）近所の人たちは、おたがいこころよく助け合っている	1	2	3	4
b）私の住んでいるところは、近所づきあいが盛んだ	1	2	3	4
c）近所に住んでいる人たちは信頼できる	1	2	3	4
d）私は近所の人たちが好きだ	1	2	3	4
e）もし引越しをすることになったらさみしい	1	2	3	4
f）近所では犯罪が多い	1	2	3	4
g）近所ではケンカが多い	1	2	3	4
h）近所には空屋だったり、放置された建物が多い	1	2	3	4

Q25　人は怒ったときやイライラしたとき、関係のない人にあたってしまうことがあります。
あなたが怒ったり、イライラしたりしたとき、次の a)～d)のようなことを、
その**イライラとは関係のない人**に対して、してしまうことはありますか？

	とてもよくある	よくある	時々ある	あまりない	まったくない
a) ネット上（LINE やメール、ソーシャルゲームなど）の やりとりで仲間にいれない	1	2	3	4	5
b) ネット上（LINE やメール、ソーシャルゲームなど）で 悪口やいやなうわさを同級生や知り合いに流す	1	2	3	4	5
c) ネット上（LINE やメール、ソーシャルゲームなど）で無視する	1	2	3	4	5
d) ネット上（SNS や掲示板、ブログなど）に悪口やいやがらせを書く	1	2	3	4	5

Q26　あなたの生活態度について、おうかがいします。次の a)～m)にあげることについて、
「はい」か「いいえ」のどちらかに○をしてください。

a) はげましがないと、私は努力を続けられないことがある	1. はい	2. いいえ
b) 自分の思いどおりにならないと、人をうらみに思うことが時々ある	1. はい	2. いいえ
c) 自分にはあまり能力がないと思ったので、 何かするのをあきらめてしまったことがある	1. はい	2. いいえ
d) 目上の人（先生・親・先輩など）の方が正しいとわかっていても、 反感を感じたことがある	1. はい	2. いいえ
e) だれの話すことでも、ちゃんと聞く方だ	1. はい	2. いいえ
f) 自分のために、他人を利用したことがある	1. はい	2. いいえ
g) 失敗したときには、いつも潔く認めるようにしている	1. はい	2. いいえ
h) 人と争ったとき、水に流すよりも、しかえしを考えることが時々ある	1. はい	2. いいえ
i) 自分の気にくわない人に対しても、いつも礼儀正しくふるまっている	1. はい	2. いいえ
j) 人が自分とまったく違う意見を言っても、イライラしたことはない	1. はい	2. いいえ
k) 人の幸福をねたましく感じたことがある	1. はい	2. いいえ
l) 人から何か頼みごとをされると、時々いらつくことがある	1. はい	2. いいえ
m) 人の気持ちを害することを、わざと言ったことは一度もない	1. はい	2. いいえ

Q27　最近の**１年間**のことを考えてみてください。あなたは次の a)～n) のようなことを**した**ことがありますか？（１つずつ○）

a）他人の物（自転車、傘、財布など）を勝手にとる	1. ある	2. ない
b）授業をさぼる	1. ある	2. ない
c）学校や塾のテストのとき、カンニングする	1. ある	2. ない
d）物にやつあたりする	1. ある	2. ない
e）自分で宿題やレポートをせず、他の人のものを写す	1. ある	2. ない
f）信号を無視する	1. ある	2. ない
g）学校や塾などへ勉強しに行くと親にウソをついて、遊びに行く	1. ある	2. ない
h）他人や学校のものをこわす	1. ある	2. ない
i）駐輪場以外の場所に勝手に自転車をとめる	1. ある	2. ない
j）タバコを吸う	1. ある	2. ない
k）酒を飲む	1. ある	2. ない
l）キセル乗車やタダ乗りをする	1. ある	2. ない
m）ドラッグ（麻薬・脱法ハーブなど）を使う	1. ある	2. ない
n）スーパーやコンビニなどで万引きする	1. ある	2. ない

Q28　最近の**１年間**のことを考えてみてください。あなたは次の a)～e) のようなことを**した**ことがありますか？（１つずつ○）

a）海賊版※の音楽・映画・ゲームなどをダウンロードする	1. ある	2. ない
b）海賊版の音楽・映画・ゲームなどをアップロード・シェアする	1. ある	2. ない
c）ネット上で性的な内容の動画や画像などを見る	1. ある	2. ない
d）ハッキングする（他人のコンピューターに不正に侵入する等の行為）	1. ある	2. ない
e）ネット上で荒らしや釣り（わざと批判を呼びこむような行為）をする	1. ある	2. ない

（※「海賊版」とは著作権などを無視して無断でネット上にアップロードされたもののことを指します。）

以上でアンケートは終わりです。
いっしょにお配りした封筒に入れて提出してください。
調査にご協力いただき、ありがとうございました。

APPENDIX 2: ENGLISH TRANSLATION AND FREQUENCIES OF QUESTIONNAIRE ITEMS FOR STUDY ONE AND STUDY FIVE

1 Please indicate your gender and write down your age: 1. Male (40.6)[11] 2. Female (59.4) Age:_____

2 What grade are you in?
1. High school 1st year (34.6)
2. High school 2nd year (34.9)
3. High school 3rd year (30.5)

3 Do you own a smartphone (iPhone, Xperia etc.) or a cellular phone?
1. Yes (97.9) 2. No (2.1)

4 On average how long do you use the Internet daily (including LINE and Facebook etc.)? This includes the PC and the cellular phone together.
1. Less than 30min (4.6) 2. 30min – 1 hour (13.7) 3. 1 – 2 hours (24.7)
4. 2 – 3 hours (21.4) 5. 3 – 4 hours (11.8) 6. 4 – 5 hours (7.9)
7. 5 – 6 hours (6.5) 8. More than 6 hours (9.4)

5 Do you use any of the following online services? Circle all that apply.
1. Facebook (14.2) 2. Twitter (70.1) 3. LINE (96.6) 4. mixi (1.1)
5. Instagram (26.7) 6. Snapchat (1.0) 7. YouTube (82.9)
8. TwitCasting (10.6) 9. Nikoniko Douga (17.6) 10. Don't use any of these (0.6)

6 In general how would you describe your relationship with friends and acquaintances?
1. Good (63.8) 2. Somewhat good (34.0) 3. Somewhat bad (1.4) 4. Bad (0.9)

7 How do you usually get along with the man you live with (father, stepfather....)?
1. I get along just fine (44.7) 2. I get along rather well (27.8) 3. I don't get along so well (4.5)
4. I don't get along at all (2.0) 5. We don't live together (13.8) 6. There is no such a man (7.2)

8 How often do you and the man you live with (father, stepfather....) do something together, such as going to the movies, going for a walk or hike, visiting relatives, attending a sporting event, and things like that?
1. More than once a week (1.1) 2. About once a week (8.0) 3. About once a month (24.6)
4. A few times a year (24.6) 5. About once a year (3.3) 6. Almost never (17.2)
7. There is no man in the house (don't live together) (21.0)

9 How many days a week do you usually eat the evening meal with the man you live with (father, stepfather....)?
1. Never (6.2) 2. Once (9.4) 3. Twice (19.2) 4. Three times (8.2) 5. Four times (8.0)

6. 5-6 times (11.0) 7. Every day (16.9) 8. There is no man in the house (don't live together) (21.1)

10 How do you usually get along with the woman you live with (your mother or stepmother)?
1. I get along just fine (65.2) 2. I get along rather well (28.6) 3. I don't get along so well (2.5)
4. I don't get along at all (1.0) 5. We don't live together (1.7) 6. There is no such a woman (0.9)

11 How often do you and the woman you live with (your mother or stepmother) do something together, such as going to the movies, going for a walk or hike, visiting relatives, attending a sporting event, and things like that?
1. More than once a week (4.1) 2. About once a week (8.0) 3. About once a month (24.6)

[11] Percentage points are based on valid responses only. School D refused to administer questions 27.10-14; therefore it is not included in these items.

4. A few times a year (24.6) 5. About once a year (3.3) 6. Almost never (17.2)
7. There is no woman in the house (don't live together) (21.0)

12 How many days a week do you usually eat the evening meal with the woman you live with (your mother or stepmother)?
1. Never (3.8) 2. Once (4.5) 3. Twice (8.6) 4. Three times (8.4) 5. Four times (9.6)
6. 5-6 times (17.6) 7. Every day (44.8) 8. There is no man in the house (don't live together) (2.6)

13 Do you have a room of your own?
1. Yes (84.3) 2. No (15.7)

14 Do you have a PC you can use at home?
1. Yes (59.2) 2. No (40.8)

15 What do your parents expect you to do after graduating from high school?
1. Attend a university (71.8) 2. Attend a college/vocational school (5.3) 3. Get a job (6.5)
4. Other (2.1) 5. Don't know, we haven't talked about it (14.4)

How strongly do you agree or disagree with the following statements about your parents or guardians?

	Fully agree	Somewhat agree	Somewhat disagree	Fully disagree
16.1 My parents encourage me to talk about my difficulties	52.3	35.0	9.1	3.6
16.2 I tell my parents about my problems and troubles	34.6	28.5	24.4	12.5
16.3 I like to get my parents point of view on things I'm concerned about	30.5	31.7	23.6	14.2
16.4 I feel my parents are good parents	55.7	37.1	4.9	2.4
16.5 My parents accept me as I am	50.4	34.5	11.7	3.4
16.6 When I am angry about something my parents try to be understanding	26.8	40.7	23.8	8.7

How strongly do you agree or disagree with the following statements?

	Fully agree	Somewhat agree	Somewhat disagree	Fully disagree
17.1 On the Internet it is easier to open myself up to someone I have just met	14.1	25.6	31.7	28.6
17.2 On the Internet it is easier to annoy or disturb someone I don't like	5.8	11.6	28.5	54.1
17.3 On the Internet it is easier to talk openly about my worries or troubles	6.5	19.4	32.2	41.9
17.4 On the Internet it is easier to blame or criticize someone without fear of revenge or repercussions	3.8	10.7	27.9	57.7
17.5 On the Internet it is easier to compliment or show affection to others without feeling shy	22.9	34.7	23.0	19.4
17.6 On the Internet it is easier to ridicule or make fun of someone	6.4	13.9	31.0	48.7

How strongly do you agree or disagree with the following statements?

	Fully agree	Somewhat agree	Somewhat disagree	Fully disagree

18.1 I like to test myself every now and then by doing something a little risky	16.8	29.3	33.3	20.6
18.2 Sometimes I will take a risk just for the fun of it	18.7	34.8	30.3	16.2
18.3 Excitement and adventure are more important to me than security	12.8	28.6	39.5	19.1
18.4 I lack companionship	6.7	20.8	43.4	29.0
18.5 There is no one I can turn to	3.5	10.3	35.8	50.4
18.6 I feel left out	2.9	9.6	50.6	36.9
18.7 I have a hard time sitting still	23.1	31.8	33.1	12.0
18.8 I start things but have a hard time finishing them	10.4	31.9	37.9	19.9
18.9 I do things without thinking	17.8	31.3	37.4	13.5
18.10 I need to use a lot of self-control to keep out of trouble	7.4	18.0	45.2	29.5

How strongly do you agree or disagree with the following statements of violent behavior done by young people?

	Fully agree	**Somewhat agree**	**Somewhat disagree**	**Fully disagree**
19.1 A bit of violence is part of the fun	2.4	8.2	29.9	59.5
19.2 One needs to make use of force to be respected	2.6	9.3	31.0	57.0
19.3 If somebody attacks me, I will hit him/her back	14.0	29.5	30.5	26.1
19.4 Without violence everything would be much more boring	1.2	4.4	20.5	73.9
19.5 It is completely normal that boys want to prove themselves in physical fights with others	1.2	4.6	25.9	68.2

How strongly do you agree or disagree with the following statements about your school?

	Fully agree	**Somewhat agree**	**Somewhat disagree**	**Fully disagree**
20.1 If I had to move I would miss my school	54.5	32.2	8.2	5.1
20.2 Teachers do notice when I am doing well and let me know	18.3	38.0	31.9	11.9
20.3 I like my school	34.8	42.3	15.5	7.5
20.4 There are other activities in school besides lessons (sports, music, theatre, disco's)	64.2	7.7	5.4	22.7

How strongly do you agree or disagree with the following statements?

	Fully agree	**Somewhat agree**	**Neither agree or disagree**	**Somewhat disagree**	**Fully Disagree**
21.1 My happiness depends very much on the happiness of those around me	47.9	34.9	13.9	2.4	0.9
21.2 I would do what would please my family, even if I detested that activity	17.2	37.8	31.0	10.5	3.5
21.3 I enjoy being unique and different from others in many ways	19.3	28.9	40.8	8.6	2.5
21.4 I enjoy working in situations involving competition with others	28.3	37.7	22.2	8.6	3.2
21.5 The well-being of my classmates is important to me	33.9	41.3	19.7	3.0	2.1

21.6 I usually sacrifice my self-interest for the benefit of my group	12.8	32.0	41.5	9.1	4.6
21.7 I often “do my own thing”	13.6	28.4	33.5	19.1	5.4
21.8 Competition is the law of nature	24.9	40.0	25.3	7.1	2.7
21.9 If a classmate gets a prize, I would feel proud	17.9	30.0	32.5	12.1	7.5
21.10 Children should feel honored if their parents receive a distinguished award	26.6	31.1	27.1	8.7	6.5
21.11 I am a unique individual	6.1	8.5	36.7	22.4	26.3
21.12 Without competition it is not possible to have a good society	22.8	33.9	29.2	9.3	4.9
21.13 I feel good when I cooperate with others	40.4	37.6	16.6	3.9	1.5
21.14 I would sacrifice an activity that I enjoy very much If my family did not approve of it	3.6	11.8	31.3	28.7	24.6

How strongly do you agree or disagree with the following statements about your friends?

	Fully agree	Somewhat agree	Somewhat disagree	Fully disagree
22.1 My friends encourage me to talk about my difficulties	45.1	44.6	8.0	2.4
22.2 I tell my friends about my problems and troubles	39.7	36.0	17.0	7.4
22.3 I like to get my friends point of view on things I’m concerned about	44.3	37.6	12.8	5.2
22.4 I feel my friends are good friends	68.0	28.5	2.7	0.7
22.5 My friends accept me as I am	48.4	41.3	8.6	1.6
22.6 When I am angry about something my friends try to be understanding	39.0	43.1	15.3	2.5
22.7 I feel alone or apart when I am with my friends	9.8	22.5	36.7	30.9

During the past 12 months have you done any of the following things? (please answer all questions)

23.1 Teased about one's body or way of speaking	Yes (35.6)	No (64.4)
23.2 Excluded or shunned someone from circle of friends	10.5	89.5
23.3 Engaged in physical fights with classmates	3.0	97.0
23.4 Uploaded/published a picture or video online without permission	12.0	88.0
23.5 Spread messages containing insults or bad rumors among classmates or acquaintances	8.2	91.8
23.6 On the Internet (social networking sites, text messages, email) insulted someone	5.1	94.9
23.7 On the Internet (social networking sites, text messages, email) excluded or shunned someone from circle of friends	2.8	97.2

How strongly do you agree or disagree with the following statements about your neighborhood?

	Fully agree	Somewhat agree	Somewhat disagree	Fully disagree
24.1 People around here are willing to help their neighbors	15.4	41.6	30.3	12.8

24.2 This is a close-knit neighborhood	13.8	31.6	36.0	18.6
24.3 People in this neighborhood can be trusted	12.4	35.4	34.2	18.0
24.4 I like my neighborhood	13.0	33.3	36.6	17.1
24.5 If I had to move, I would miss the neighborhood	24.2	25.3	29.2	21.4
24.6 There is a lot of crime in my neighborhood	4.4	8.1	35.0	52.4
24.7 There is a lot of fighting	3.0	6.3	30.8	60.0
24.8 There are a lot of empty and abandoned buildings	1.6	7.1	29.7	61.5

Sometimes when people are upset or frustrated they take it out on innocent people who do not cause their anger or frustration. Indicate how often you have done the following online or through text messages to people who were not the cause of your anger or frustration. Note: These are people who did nothing to you.	**All the time**	**Almost all the time**	**Sometimes**	**Almost never**	**Never**
25.1 Left them out of an activity or conversation	0.4	0.8	5.4	19.2	74.3
25.2 Spread bad rumors about them	0.1	1.3	5.5	16.6	76.5
25.3 Ignored them	0.6	2.3	7.4	18.2	71.6
25.4 Posted mean or insulting things about them	1.1	0.0	3.9	16.0	78.9

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you personally.

26.1 It is sometimes hard to go on with my work if I am not encouraged	Yes (57.2)	No (42.8)
26.2 I sometimes feel resentful when I don't get my way	45.2	54.8
26.3 On a few occasions, I have given up doing something because I thought too little of my ability	70.2	29.8
26.4 There have been times when I felt like rebelling against people in authority even when I knew they were right	80.9	19.1
26.5 No matter who I'm talking to, I'm always a good listener	71.7	28.3
26.6 There have been occasions when I took advantage of someone	48.1	51.9
26.7 I'm always willing to admit it when I make a mistake	68.2	31.8
26.8 I sometimes try to get even rather than to forgive and forget	41.8	58.2
26.9 I am always courteous, even to people who are disagreeable	67.4	32.6
26.10 I have never been irked when people expressed ideas very different from my own.	35.0	65.0
26.11 There have been times when I was quite jealous of the good fortune of others	46.7	53.3
26.12 I am sometimes irritated by people who ask favors of me	49.5	50.5
26.13 I have never deliberately said something that hurt someone's feelings	29.5	70.5

During the past 12 months have you done any of the following things? (please answer all questions)

27.1 Took something (wallet, umbrella etc.) from someone without permission	Yes (9.9)	No (90.1)
27.2 Skipped school without valid reason	19.6	80.4
27.3 Cheated on a test or an exam	5.4	94.6

27.4 Took your anger out on someone or something	54.3	45.7
27.5 Copied someone's essay or homework	61.6	38.4
27.6 Crossed the street while the light was red	77.5	22.5
27.7 Told my parents that I was going to school, but did not go	18.4	81.6
27.8 Damaged a classmate's or the school's property	9.7	90.3
27.9 Parked my bike where I wasn't supposed to	47.2	52.8
27.10 Smoked cigarettes	1.1	98.9
27.11 Drank alcohol	7.2	92.8
27.12 Rode public transportation without a ticket	2.2	97.8
27.13 Used drugs (marijuana, XTC etc.)	0.3	99.7
27.14 Stole something from a store	0.8	99.2

During the past 12 months have you done any of the following things? (please answer all questions)

28.1 Downloaded pirated software (music, movies, games etc.)	Yes (16.8)	No (83.2)
28.2 Uploaded or shared pirated software (music, movies, games etc.)	6.0	94.0
28.3 Watched online material that was not age appropriate (pornography etc.)	20.8	79.2
28.4 Hacking (accessed computer networks illegally or without permission)	1.5	98.5
28.5 Wrote insulting comments with the intent of provoking others	3.8	96.2

APPENDIX 3: JAPANESE QUESTIONNAIRE FOR STUDY THREE

中学生・高校生の生活とインターネット・ケータイ利用に関する調査

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調査ご協力のお願い

この調査は、中学生・高校生の方を対象に、ふだんの生活やインターネットの利用状況についておききし、研究に役立てようとするものです。得られた調査結果は、私（ウードリス・レイニス）の修士論文・博士論文での分析に用います。

みなさまの回答はすべて統計として取りまとめ、個人の回答内容が明らかにされることは一切ありませんので、安心してご回答ください。このアンケート調査に協力するかどうかはみなさんの自由であり、協力しなくても不利益をこうむることはありません。また、答えたくない質問には無理にお答えいただかなくてもかまいません。

アンケートに記入し終わったら、いっしょに配った封筒に入れて提出してください。調査結果は学校全体で集計して表にまとめ、先生にお渡ししますので、調査結果を知りたい方は先生におたずねください。

調査の趣旨をご理解いただき、ぜひご協力いただきますよう、お願いいたします。

Ｑ１　あなたはケータイを何台お持ちですか？
※ここでの「ケータイ」には、いわゆる携帯電話の他、スマートフォン(iPhone 等)も含みます。
あてはまるところに１つだけ○をしてください。

1. １台　　2. ２台　　3. ３台以上　　4. 持っていない

「4. 持っていない」に○をした人は Ｑ10 へお進みください

Ｑ２　あなたはスマートフォンをお持ちですか？　　1. はい　2. いいえ

Ｑ３　あなたはケータイでインターネットを利用していますか？　　1. はい　2. いいえ

Ｑ４　あなたは一日にどれくらいケータイを使いますか？
メール・ネット・通話すべてあわせてお答えください。（１つだけ○）

1. １５分未満　　2. １５～３０分くらい　　3. ３０分～１時間くらい
4. １～２時間くらい　　5. ２～３時間くらい　　6. ３時間以上

Ｑ５　あなたは一日に平均して、ケータイでどれくらい通話しますか？（１つだけ○）

1. １０分未満　2. １０～２０分くらい　3. ２０分～３０分くらい
4. ３０分～１時間くらい　5. １時間以上

Ｑ６　あなたは一日に平均して、ケータイでメールを何通くらい**送信**しますか？（１つだけ○）

1. １０通未満　2. １０～２０通くらい　3. ２０～５０通くらい
4. ５０～１００通くらい　5. １００通以上

Ｑ７　あなたは友だちからメールの返信が来るまで、どのくらい時間が空くと不安（不満）を感じますか？　もっとも近いところに１つだけ○をしてください。

1. ５分くらい　2. １０分くらい　3. ２０分くらい　4. ３０分くらい
5. １時間くらい　6. ３時間くらい　7. ６時間くらい　8. 半日くらい
9. １日くらい　10. とくに気にしない

Ｑ８　あなたのケータイには「フィルタリング」（有害サイトへのアクセスを制限するソフトやサービス）がかけられていますか？（１つだけ○）

1. はい　2. いいえ　3. わからない

Ｑ９　あなたは学校で授業中にケータイを使うことがありますか？（１つだけ○）

1. よく使う　2. ときどき使う　3. たまに使う
4. 授業中は使わないが、休み時間には使う　5. 学校では使わない

Q10　あなたは**パソコンで**インターネットを利用しますか？

1. はい　2. いいえ（→Q12 へお進みください）

Q11　**主に**どこで利用しますか？（１つだけ○）

1. 自宅　2. 学校　3. ネットカフェ　4. 友だちの家　5. その他

Q12　あなたがインターネットを利用するときには、ケータイとパソコン、どちらを使うことが多いですか？（１つだけ○）

1. ケータイでしか使わない
2. ケータイの方が多い
3. ケータイとパソコン半々くらい
4. パソコンの方が多い
5. パソコンでしか使わない
6. ケータイでもパソコンでもネットは使わない

→ 6.に○をした人はQ16 へ

Q13　あなたは一日に平均して、どれくらいインターネットを利用しますか？
パソコンでの利用とケータイでの利用、どちらも合わせた時間をお答えください。（１つだけ○）

1. ３０分未満　2. ３０分～１時間くらい　3. １～２時間くらい
4. ２～３時間くらい　5. ３～４時間くらい　6. ４時間以上

Q14　あなたの生活にとって、インターネットは重要ですか？（1つだけ○）

1. とても重要　　2. まあ重要　　3. あまり重要でない　　4. まったく重要でない

Q15　親・保護者に内緒で使っているサイトはありますか？　　1. ある　　2. ない

次のQ16～Q32にあげることは、あなたにどのくらいあてはまりますか？（それぞれ1つずつ○）

	1 あてはまる	2 あてはまるまあ	3 あてはまらないあまり	4 あてはまらない
Q16　ケータイなしで生活することは考えられない	1	2	3	4
Q17　インターネットなしで生活することは考えられない	1	2	3	4
Q18　ふだん会う友だちよりネット上の友だちのほうが多い	1	2	3	4
Q19　ふだん友だちと会って話すよりもケータイやネットでやりとりすることのほうが多い	1	2	3	4
Q20　思った以上に長くケータイやパソコンをしてしまうことがある	1	2	3	4
Q21　ケータイやパソコンを使いすぎて、成績が下がったことがある	1	2	3	4
Q22　面と向かって話すより、インターネットやケータイメールのほうが楽だ	1	2	3	4
Q23　インターネットは匿名（とくめい）なので、本音や感じたことを表現しやすい	1	2	3	4
Q24　インターネットやメールでは、相手の顔が見えないので、ふだん言いにくいことを書きやすい	1	2	3	4
Q25　インターネットやメールでは返事が好きな時にできるので、とても気が楽に感じる	1	2	3	4
Q26　メールやネット上のメッセージを読むとき、相手のイメージがリアルに頭に浮かぶ	1	2	3	4
Q27　ネット上では自分が別人のようになることがある	1	2	3	4
Q28　ネット上では、年上や目上の人とでも対等に接することができるように感じる	1	2	3	4
Q29　インターネットではだれが書いたのがわからないので、人を傷つけるようなことを書いてもかまわない	1	2	3	4
Q30　だれからも注意されないので、インターネットやメールでは悪口を書きやすい	1	2	3	4
Q31　ネット上には決まり（ルール）がないから、何をしてもいいと思う	1	2	3	4
Q32　インターネットやメールで悪口を書くのはいじめではない	1	2	3	4

Q33　最近の６カ月におけるあなたのご両親・保護者との関係について、あてはまるところに１つだけ○をしてください。

1. よい　　2. まあよい　　3. あまりよくない　　4. よくない

Q34　最近の６カ月におけるあなたの担任の先生との関係について、あてはまるところに１つだけ○をしてください。

1. よい　　2. まあよい　　3. あまりよくない　　4. よくない

Q35　最近の６カ月におけるあなたの同級生との関係について、あてはまるところに１つだけ○をしてください。

1. よい　　2. まあよい　　3. あまりよくない　　4. よくない

最近の６カ月のことを考えてみてください。あなたには次のQ36～Q43のようなことがありましたか？１つずつ○をしてください。

Q36　テスト・試験で悪い成績をとったことがある	1　はい	2　いいえ
Q37　友だちや家族とけんかをしたことがある	1　はい	2　いいえ
Q38　彼氏・彼女とわかれた	1　はい	2　いいえ
Q39　今の学校に転校してきた	1　はい	2　いいえ
Q40　学校の授業についていけない	1　はい	2　いいえ
Q41　好きなことをするための時間がない	1　はい	2　いいえ
Q42　学校は退屈で早く帰りたいと毎日のように思う	1　はい	2　いいえ
Q43　学校に行くことでストレスを感じる	1　はい	2　いいえ

Q44　あなたはお母さんと一緒に住んでいますか？

1. はい　　2. いいえ

Q45　あなたはお父さんと一緒に住んでいますか？

1. はい　　2. いいえ

Q46　あなたの学校の成績は平均と比べて、どうですか？

1. 平均より上　　2. やや上　　3. 平均くらい　　4. やや下　　5. 平均より下

Q47　たとえば、Aさんが Bさんに悪口を言われて、なぐられたとします。これはいじめだと思いますか？

1. はい　　2. いいえ

Q48　たとえば、Aさんが３人の同級生グループに悪口を言われて、なぐられたとします。これはいじめだと思いますか？

1. はい　　2. いいえ

Q49　小学校以降で、あなたが「何回か**された**ことがあるもの」に、**すべて**○をしてください。

1. 体のことや言葉づかいのことでからかわれる
2. ノートに落書きをされる
3. 因縁(いんねん)をつけられたり、けんかをふっかけられたりする
4. わけもなくなぐられたり、暴力をふるわれたりする
5. 持ち物をかくされたり、こわされたりする
6. お金や持ち物をとられる
7. おしゃべりや遊びの仲間にいれてくれない
8. どれもされたことはない

Q50　それでは次にあげることについてはどうですか？
小学校以降で、あなたが「何回か**された**ことがあるもの」に、**すべて**○をしてください。

1. 勝手に写真やビデオを撮られて、ネット上やメールで流される
2. 悪口やいやなうわさをメールで同級生や知り合いに流される
3. ネット上で悪口やいやがらせを書かれる
4. 悪口やいやがらせの書かれたメールが送られてくる
5. 性的なことを書かれたメールが送られてくる
6. 勝手に自分のプロフやブログなどを書き換えられる・作成される
7. 電話がかかってきて悪口やいやがらせを言う
8. その他のネットやケータイでのトラブル（具体的に：　　）
9. どれもされたことはない（→ 9.に○をした人はQ58へお進みください）

Q51　最近6カ月にこういうことはありましたか？
1. はい　　2. いいえ

Q52　あなたは上記のことをされたとき、どのように思いましたか？
あてはまるところにすべて○をしてください。
1. とくに気にしなかった　　2. 悲しかった　　3. 頭にきた、怒った
4. 怖かった　　5. 訳がわからなかった
6. その他（具体的に：　　）

Q53　あなたは上記のことをされて、だれかに言いましたか？（言った相手にすべて○）
1. 友だち　　2. 親　　3. 学校の先生　　4. その他　　5. だれにも言っていない

Q54　今までにそのようなことをされたことは何回ありますか？
（Q50で２つ以上に○をした人は、すべて合計した回数でお答えください）
1. １回　　2. ２～３回　　3. ４～５回　　4. ６～９回　　5. １０回以上

Q55　だれにされたかはわかりますか？　だいたい想像がつくくらいでもかまいませんので、あてはまるところにすべて○をしてください。

1. 同じクラスの生徒　2. 他のクラスの生徒　3. 同じ学校以外の人
4. ネット上で知り合った人　5. その他　6. わからない

Q56　だれにされたかについて、どのくらい確信がありますか？
（Q50 で２つ以上に○をした人は、もっとも確信のあるケースについてお答えください）

1. かなり確信がある　2. まあ確信がある　3. あまり確信がない
4. ほとんど確信がない　5. だれなのか、まったくわからない

Q57　それをした相手は何人いましたか？
（Q50 で２つ以上に○をした人は、もっとも人数の多いケースについてお答えください）

1. １人　2. ２～３人　3. ４～５人　4. ６～９人　5. １０人以上
6. わからない

次のQ58～Q73 にあげることは、あなたにどのくらいあてはまりますか？（それぞれ１つずつ○）

	1 あてはまる	2 まああてはまる	3 あまりあてはまらない	4 あてはまらない
Q58　良い成績をとることへのプレッシャー（圧力）を感じている	1	2	3	4
Q59　周りに認められることが大切だ	1	2	3	4
Q60　空気を読めることはとても大切だ	1	2	3	4
Q61　私はいつもチームワークを大事にする	1	2	3	4
Q62　友達が誰かをいじめたら、私も参加する	1	2	3	4
Q63　いじめも成長の一部だと思う	1	2	3	4
Q64　ある人がいじめられるのはしょうがない	1	2	3	4
Q65　KY（空気を読めない）な人がいじめられるのはしょうがない	1	2	3	4
Q66　授業中は、先生が言っていることを集中して聞く	1	2	3	4
Q67　私にとってはみんなと同じようにすることが大切だ	1	2	3	4
Q68　人気のある人や強い人はいじめをしてもかまわないと思う	1	2	3	4
Q69　個性的であることは大切だと思う	1	2	3	4
Q70　私にとって正義は大切なことだ	1	2	3	4
Q71　私にとって人間関係は大切なことだ	1	2	3	4
Q72　クラスの団結は重要だ	1	2	3	4
Q73　いじめは悪いことだ	1	2	3	4

Q74 次のうち、小学校以降で、あなたが「**した**ことがあるもの」に、**すべて**○をしてください。

1. 体のことや言葉づかいのことでからかう
2. ノートに落書きをする
3. 因縁(いんねん)をつけたり、けんかをふっかけたりする
4. わけもなくなぐったり、暴力をふるったりする
5. 持ち物をかくしたり、こわしたりする
6. お金や持ち物をとる
7. おしゃべりや遊びの仲間にいれない
8. どれもしたことはない

Q75　それでは次にあげることについてはどうですか？
小学校以降で、あなたが「**した**ことがあるもの」に、**すべて**○をしてください。

1. 勝手に写真やビデオを撮って、ネット上やメールで流す
2. 悪口やいやなうわさをメールで同級生や知り合いに流す
3. ネット上で悪口やいやがらせを書く
4. 悪口やいやがらせの書かれたメールを送る
5. 性的なことを書いたメールを送る
6. 勝手に相手のプロフやブログなどを書き換える・作成する
7. 電話をかけて悪口やいやがらせを言う
8. その他のネットやケータイでのトラブル（具体的に：　　）
9. どれもしたことはない（→ 9. に○をした人はQ80へお進みください）

→ Q76　最近6カ月にこういうことはありましたか？
1. はい　　2. いいえ

→ Q77　今までにそのようなことをしたことは何回ありますか？
（Q75で2つ以上に○をした人は、すべてを合計した回数でお答えください）
1. 1回　　2. 2～3回　　3. 4～5回　　4. 6～9回　　5. 10回以上

→ Q78　だれに対してしましたか？　あてはまるものに**すべて**○をしてください。
1. 同じクラスの生徒　　2. 他のクラスの生徒　　3. 同じ学校以外の人
4. ネット上で知り合った人　　5. その他

→ Q79　なぜそのようなことをしたのですか？　あてはまるものに**すべて**○をしてください。
1. その人が嫌いだったから　　2. その人にいじめられたことがあるから
3. 遊び半分で　　4. 友だちや知り合いがやっていたから
5. 友だちや知り合いにやるように言われたから　　6. 自分でもよくわからない
7. その他（具体的に：　　）

ページをめくってください。最後のページ（裏表紙）に続きます

Q80 あなたには友だちが何人いますか？

1. ３人以下　　2. ４～７人　　3. ８～２０人　　4. ２１人以上

Q81 あなたには親友が何人いますか？

1. １人以下　　2. ２人　　3. ３人　　4. ４人　　5. ５人以上

Q82　次のうち、あなたが「いじめだと思うもの」に、すべて○をつけてください。

1. 体のことや言葉づかいのことでからかう
2. ノートに落書きをする
3. 因縁（いんねん）をつけたり、けんかをふっかけたりする
4. わけもなくなぐったり、暴力をふるったりする
5. 持ち物をかくしたり、こわしたりする
6. お金や持ち物をとる
7. おしゃべりや遊びの仲間にいれない
8. 勝手に写真やビデオを撮って、ネット上やメールで流す
9. 悪口やいやなうわさをメールで同級生や知り合いに流す
10. ネット上で悪口やいやがらせを書く
11. 悪口やいやがらせの書かれたメールを送る
12. 性的なことを書いたメールを送る
13. 勝手に相手のプロフやブログなどを書き換える・作成する
14. 相手に電話をかけて悪口やいやがらせを言う
15. この中に、いじめだと思うものはとくにない

Ｆ１　あなたの性別と年齢をご記入ください。　　1. 男　2. 女　＿＿＿＿＿＿ 歳

Ｆ２　あなたの学年をご記入ください。　　1. 中学１年　2. 中学２年　3. 中学３年　4. 高校１年　5. 高校２年　6. 高校３年

Ｆ３　（この質問は高校生の方だけお答えください。）
高校を卒業した後の進路について、どうお考えですか？

1. 大学に進学する予定　　2. 専門学校に進学する予定　　3. 就職する予定
4. その他（具体的に：　　）　　5. 進路はまだとくに決めていない

以上でアンケートは終わりです。
いっしょにお配りした封筒に入れて提出してください。
調査にご協力いただき、ありがとうございました。

APPENDIX 4: ENGLISH TRANSLATION AND FREQUENCIES OF QUESTIONNAIRE ITEMS FOR STUDY THREE

Q1 How many phones do you own?

1. One (88.3)[12] 2. Two (9.6) 3. Three or more (0.6) 4. Do not own a cell phone (1.6)

Q2 Do you own a smart phone? 1. Yes (63.8) 2. No (36.2)

Q3 Do you use the Internet on your phone? 1. Yes (84.8) 2. No (15.2)

Q4 For how long do you use your phone daily (includes SMS, phone calls, Internet)?

1. 1–15 minutes (7.4) 2. 15–30 minutes (9.7) 3. 30–60 minutes (11.5)
4. 1–2 hours (17.8) 5. 2–3 hours (18.2) 6. More than 3 hours (35.4)

Q5 How long do you talk on your phone daily?

1. Less than 10 minutes (79.1) 2. 10–20 minutes (8.8) 3. 20–30 minutes (4.4)
4. 30–60 minutes (3.0) 5. More than 1 hour (4.7)

Q6 Using your phone how many mails/SMS do you send daily?

1. Less than 10 mails/SMS (59.6) 2. 10–20 mails/SMS (21.4) 3. 20–50 mails/SMS (10.2)
4. 50–100 mails/SMS (4.7) 5. More than 100 mails/SMS (4.0)

Q7 How long before you feel uncomfortable or feel frustrated when waiting for a reply?

1. About 5 minutes (1.4) 2. About 10 minutes (3.6) 3. About 20 minutes (4.6)
4. About 30 minutes (6.1) 5. About 1 hour (10.9) 6. About 3 hours (9.6)
7. About 6 hours (3.6) 8. About half a day (3.4) 9. About one day (8.6)
10. Do not care (48.2)

Q8 Do you have any filtering software installed on your phone?

1. Yes (36.4) 2. No (41.6) 3. Don't know (22.0)

Q9 Do you use your phone during class?

1. Often (6.3) 2. Sometimes (9.3) 3. Rarely (9.7)
4. Only during breaks (61.4) 5. Don't use (13.3)

Q10 Do you use the Internet on a computer?

1. Yes (77.5) 2. No (22.5)

Q11 Where do you use the Internet on a computer?

1. My home (97.7) 2. School (1.6) 3. Internet café (0.1)
4. Friends' house (0.1) 5. Other place (0.4)

Q12 Do you use your phone or a PC to connect to the Internet mostly?

1. Only phone (16.6) 2. Mostly phone (42.7) 3. Phone and computer about the same (12.5)
4. Mostly computer (14.6) 5. Only computer (14.6) 6. Neither (2.3)

Q13 How much time do you spend online daily?

1. Less than 30 minutes (26.6) 2. 30–60 minutes (20.9) 3. 1–2 hours (18.2)
4. 2–3 hours (12.9) 5. 3–4 hours (8.2) 6. More than 4 hours (13.2)

[12] Percentage points are based on valid responses only.

Q14 Is Internet important to you?
1. Very important (41.3) 2. Somewhat important (49.7)
3. Not very important (8.1) 4. Not important at all (0.9)

Q15 Do you use any websites that you keep secret from your parents/guardian?
1. Yes (23.7) 2. No (76.3)

How strongly do you agree or disagree with the following statements?

	Fully agree	Somewhat agree	Somewhat disagree	Fully disagree
Q16 It would be difficult without a phone daily	37.1	36.3	18.8	7.8
Q17 It would be hard to imagine daily life without Internet	30.2	39.7	21.1	9.0
Q18 I have more friends online than I meet in person daily	2.8	3.7	16.2	77.3
Q19 I connect with my friends through ICT's more than talking to them in person	5.1	12.1	34.4	48.4
Q20 There are times when I use my phone or PC longer than I intended	45.3	33.9	13.2	7.6
Q21 There are times when my grades suffer due to spending too much time online	12.3	22.3	37.0	28.3
Q22 It is easier to connect with others through ICTs than talking in person	9.0	20.1	36.5	36.4
Q23 The Internet is anonymous so it is easier to express my true feelings or thoughts	9.5	21.4	32.1	37.0
Q24 It is easier to write things online or in message, because you don't see the other's face	8.6	23.9	32.1	35.4
Q25 It is easier to communicate online, because you can reply when you like	18.8	39.1	27.6	14.4
Q26 I have an image of the other person in my head when I read his/her mail or message online	11.3	31.0	37.7	20.1
Q27 I feel like a different person online	5.4	11.2	30.0	53.4
Q28 I feel that I can communicate online with others who are older or have more status on the same level	8.0	18.6	33.8	39.6
Q29 I don't mind writing bad things about others online, because it's anonymous	1.1	2.4	13.2	83.3
Q30 It is easy to write bad things online, because there are no repercussions	1.6	5.0	18.8	74.6
Q31 There are no rules online therefore you can do whatever you want	1.0	2.6	12.9	83.5
Q32 Writing bad things online is not bullying	1.7	2.7	13.4	82.2

Q33 Think about the past 6 months. How do you usually get along with your parents/guardians?
1. I get along just fine (40.6) 2. I get along rather well (47.7)
3. I don't get along so well (9.1) 4. I don't get along at all (2.5)

Q34 Think about the past 6 months. How do you usually get along with your homeroom teacher?
1. I get along just fine (24.2) 2. I get along rather well (62.9)
3. I don't get along so well (9.0) 4. I don't get along at all (3.8)

Q35 Think about the past 6 months. How do you usually get along with your classmates?
1. I get along just fine (49.2) 2. I get along rather well (44.9)
3. I don't get along so well (4.8) 4. I don't get along at all (1.1)

During the past 6 months have you experienced any of the following things? (please answer all questions)

Q36 Received a bad grade	Yes (86.1)	No (13.9)
Q37 Was in a fight with friends or family members	66.1	33.9
Q38 Broke up with my boyfriend/girlfriend	17.5	82.5
Q39 Changed schools	1.1	98.9
Q40 Have had trouble following the curriculum	44.1	55.9
Q41 Haven't had time to do the things I like	42.1	57.9
Q42 Every day I think school is boring and I can't wait to get out of it	38.4	61.6
Q43 Going to school makes me more stressful	30.6	69.4

Q44 Do you live with your mother?
1. Yes (96.5) 2. No (3.5)

Q45 Do you live with your father?
1. Yes (80.6) 2. No (19.4)

Q46 How are your grades compared to the average?
1. Above average (11.4) 2. Slightly above average (14.7) 3. Around average (33.8)
4. Slightly below average (18.7) 5. Below average (21.4)

Q47 For example, student A was teased and hit by student B. Do you think it is bullying?
1. Yes (49.4) 2. No (50.6)

Q48 For example, student A was teased and hit by three of his/her classmates. Do you think it is bullying?
1. Yes (93.8) 2. No (6.2)

Q49 Have you had any of the following things done to you? Circle all that apply.

1. Tease about one's body or way of speaking (35.6)
2. Scribble on one's notebooks or personal belongings (20.5)
3. Provoke a fight or blame without pretext (22.7)
4. Physically abuse someone (12.9)
5. Hide or destroy one's things (18.0)
6. Steal one's money or belongings (11.8)
7. Exclude or shun someone from circle of friends (18.4)
8. None of the above (40.5)

Q50 Have you had any of the following things done to you? Circle all that apply.

1. Upload/publish a picture or video online without permission (6.0)
2. Classmates or acquaintances spreading messages containing insults or bad rumors about me (10.2)
3. Slander someone online (7.4)
4. Send slander or abusive messages/e-mails (3.5)
5. Send sexual messages/e-mails (3.7)
6. Tamper with or create someone's fake online profile (0.9)
7. Abuse or slander someone on phone (1.9)
8. Other: (1.1)
9. None of the above (go straight to Q58) (77.9)

Q51 Has it happened during the last six months?
1. Yes (30.9) 2. No (69.1)

Q52 How did you feel when it happened? Circle all that apply.
1. Did not care (29.2) 2. Felt sad (25.6) 3. Felt angry (39.0)
4. Felt afraid (14.9) 5. Hard to say (21.5) 6. Other: (5.6)

Q53 Did you tell anyone about what happened? Circle all that apply.
1 .Friend/-s (49.7) 2. Parent/-s (29.7) 3. Schoolteacher (13.3)
4. Other (6.7) 5. Didn't tell anybody (31.8)

Q54 How many times has it happened up to now? (Count the total number for all the answers you circled in Q50)
1. 1 time (27.9) 2. 2–3 times (34.7) 3. 4–5 times (16.8)
4. 6–9 times (6.9) 5. 10 or more times (17.9)

Q55 Do you know who did that to you? Circle all that apply.
1. Classmate (56.5) 2. Student from the same school (39.9)
3. Someone from outside of school (5.7) 4. Someone I know online (4.1)
5. Other (7.8) 6. Don't know (14.5)

Q56 How confident are you about the identity of the perpetrator?
1. Very confident (67.7) 2. Somewhat confident (17.2) 3. Not really confident (4.2)
4. Almost no confidence (0.5) 5. No idea whatsoever (10.4)

Q57 How many perpetrators were there?
1. One (24.6) 2. 2–3 (34.0) 3. 4–5 (14.1)
4. 6–9 (4.2) 5. Ten or more (6.3) 6. I don't know (16.8)

How strongly do you agree or disagree with the following statements?

	Fully agree	Somewhat agree	Somewhat disagree	Fully disagree
Q58 I feel pressure to study get good grades	17.9	30.5	32.8	18.9
Q59 Fitting in a group is important to me	30.1	46.3	18.1	5.4
Q60 Being able to "sense the atmosphere" is important to me	45.4	47.7	4.7	2.1
Q61 Teamwork is important to me	24.5	55.3	16.4	3.7
Q62 If my friends bully someone I usually join in	0.8	3.6	39.9	55.7
Q63 Bullying is part of growing up	3.0	10.2	32.9	53.9
Q64 It can't be helped that some people will get bullied	3.6	10.5	33.5	52.3
Q65 It can't be helped that those who can't "sense the atmosphere" get bullied	2.8	10.1	37.6	49.5
Q66 I always concentrate and listen to what the teacher says in class	17.6	46.7	28.2	7.6
Q67 It is important for me to be the same as everybody else	12.9	32.1	39.3	15.6
Q68 I don't mind that the popular or the stronger students bully others	1.2	1.6	17.4	79.7
Q69 Being individual is important	53.1	39.8	5.8	1.4
Q70 Justice is important to me	25.5	48.5	21.9	4.2

Q71 Human relations are important to me	58.4	35.5	4.6	1.5
Q72 Class unity is important	45.3	38.5	12.2	4.0
Q73 Bullying is bad	77.4	15.8	3.5	3.3

Q74 Have you done any of the following things? Circle all that apply.

1. Tease about one's body or way of speaking (29.3)
2. Scribble on one's notebooks or personal belongings (19.8)
3. Provoke a fight or blame without pretext (7.4)
4. Physically abuse someone (8.2)
5. Hide or destroy one's things (11.3)
6. Steal one's money or belongings (3.8)
7. Exclude or shun someone from circle of friends (17.4)
8. None of the above (50.8)

Q75 Have you done any of the following things? Circle all that apply.

1. Upload/publish a picture or video online without permission (2.3)
2. Classmates or acquaintances spreading messages containing insults or bad rumors about me (2.7)
3. Slander someone online (3.5)
4. Send slander or abusive messages/e-mails (0.7)
5. Send sexual messages/e-mails (0.9)
6. Tamper with or create someone's fake online profile (0.3)
7. Abuse or slander someone on phone (0.7)
8. Other: (0.2)
9. None of the above (go straight to Q58) (92.1)

Q76 Has it happened during the last six months?

1. Yes (43.1) 2. No (56.9)

Q77 How many times has it happened? (Count the total number for all the answers you circled in Q50)

1. 1 time (25.0) 2. 2–3 times (36.8) 3. 4–5 times (13.2)
4. 6–9 times (1.5) 5. 10 or more times (23.5)

Q78 Who did you target? Circle all that apply.

1. Classmate (58.8) 2. Student from the same school (41.2)
3. Someone from outside of school (14.7) 4. Someone I know online (4.4)
5. Other (11.8)

Q79 Why did you do it? Circle all that apply.

1. I hated the other person (14.7) 2. I was bullied by the other person (14.7)
3. Just having fun (45.6) 4. Because my friend did it (10.3)
5. Because my friend/-s told me to (1.5) 6. Don't know (13.2)
7. Other: (14.7)

Q80 How many friends do you have?

1. 3 or less (2.5) 2. 4–7 (6.6) 3. 8–20 (18.6) 4. More than 20 (72.2)

Q80 How many close friends do you have?

1. Less than one (15.6) 2. Two (19.5) 3. Three (18.2)
4. Four (9.8) 5. More than four (36.9)

Q81 Do you think the following things are bullying? Circle all that apply.

1. Tease about one's body or way of speaking (62.0)
2. Scribble on one's notebooks or personal belongings (38.2)
3. Provoke a fight or blame without pretext (53.6)
4. Physically abuse someone (82.1)
5. Hide or destroy one's things (82.3)
6. Steal one's money or belongings (85.4)
7. Exclude or shun someone from circle of friends (79.2)
8. Upload/publish a picture or video online without permission (77.3)
9. Spreading messages containing insults or bad rumors among classmates or acquaintances (85.5)
10. Slander someone online (85.3)
11. Send slander or abusive messages/e-mails (83.9)
12. Send sexual messages/e-mail (72.8)
13. Tamper with someone's or create a fake online profile (72.4)
14. Abuse or slander someone on phone (82.7)
15. None of the above (1.6)

F1 Please indicate your gender and write down your age: 1. Male (42.9) 2. Female (57.1) Age:_____

F2 What grade are you in?

1. Junior high school 1st year (0.0)
2. Junior high school 2nd year (0.0)
3. Junior high school 3rd year (0.0)
4. Senior high school 1st year (43.6)
5. Senior high school 2nd year (36.4)
6. Senior high school 3rd year (20.0)

F2 What are your future plans after graduating high school?

1. Attend a university (64.4)
2. Attend a college/vocational school (13.1)
3. Get a job (7.9)
4. Other (1.2)
5. Haven't decided yet (13.4)

APPENDIX 5: FULL MODEL WITH THE BEST FIT

Summary of estimates for latent variables.

Latent variables	Unstandardized estimate	Standardized estimate	S.e.	Z-value	P
Benign disinhibition (ODSB)					
ODS1*	1.000	0.751			
ODS3	1.064	0.874	0.046	25.298	0.000
ODS5	0.934	0.701	0.039	23.753	0.000
Toxic disinhibition (ODST)					
ODS2	1.000	0.819			0.000
ODS4	1.090	0.893	0.029	37.796	0.000
ODS6	1.104	0.904	0.029	38.600	0.000
Attitudes towards violence (ATTV)					
ATTV1	1.000	0.845			
ATTV2	0.937	0.791	0.028	33.711	0.000
ATTV3	0.725	0.613	0.026	28.385	0.000
ATTV4	1.081	0.913	0.032	33.700	0.000
ATTV5	0.879	0.757	0.027	33.812	0.000
Low self-control (LSELF)					
LSELF1	1.000	0.853			
LSELF2	1.077	0.917	0.032	33.157	0.000
LSELF3	0.921	0.829	0.026	37.856	0.000
Parental attachment (PATT)					
PATT1	1.000	0.841			
PATT2	1.379	0.908	0.022	49.456	0.000
PATT3	1.348	0.883	0.020	51.680	0.000
PATT4	0.795	0.833	0.022	45.406	0.000
PATT5	0.956	0.832	0.022	45.527	0.000
PATT6	1.081	0.765	0.020	45.085	0.000
School attachment (SATT)					
SATT1	1.000	0.835			
SATT2	1.075	0.612	0.028	26.357	0.000
SATT3	0.972	0.898	0.040	27.146	0.000
Peer (friend) attachment (FRATT)					
FRATT1	1.000	0.876			
FRATT2	1.029	0.901	0.018	56.603	0.000
FRATT3	1.009	0.883	0.017	60.023	0.000
FRATT4	0.957	0.838	0.019	49.732	0.000
FRATT5	0.941	0.824	0.018	53.121	0.000
FRATT6	0.924	0.809	0.017	53.672	0.000
Neighborhood attachment (NHOOD)					
NHOOD1	1.000	0.871			
NHOOD2	0.984	0.858	0.018	54.504	0.000
NHOOD3	1.060	0.924	0.017	62.878	0.000
NHOOD4	1.062	0.926	0.017	64.069	0.000
NHOOD5	0.824	0.718	0.017	47.142	0.000

*Item numbers correspond to the order they were placed in the questionnaire; N=733.

Summary of regression coefficients.

	Unstandardized estimate	Standardized estimate	S.e.	Z-value	P
Offline deviance ~					
Benign online disinhibition	-0.039	-0.013	0.224	-0.173	0.863
Toxic online disinhibition	0.279	0.104	0.223	1.251	0.211
Attitudes towards violence	0.626	0.241	0.118	5.311	0.000
Low self-control	0.358	0.139	0.105	3.396	0.001
Parental attachment	-0.182	-0.070	0.074	-2.479	0.013
School attachment	-0.042	-0.016	0.130	-0.324	0.746
Peer (friend) attachment	0.123	0.049	0.104	1.178	0.239
Neighborhood attachment	-0.315	-0.125	0.062	-5.067	0.000
Online deviance ~					
Benign online disinhibition	0.011	0.008	0.113	0.096	0.923
Toxic online disinhibition	0.432	0.354	0.109	3.968	0.000
Attitudes towards violence	0.363	0.307	0.063	5.764	0.000
Low self-control	-0.007	-0.006	0.058	-0.124	0.902
Parental attachment	-0.093	-0.079	0.040	-2.343	0.019
School attachment	0.024	0.020	0.076	0.318	0.750
Peer (friend) attachment	-0.127	-0.111	0.058	-2.176	0.030
Neighborhood attachment	-0.054	-0.047	0.037	-1.476	0.140

N=733.

APPENDIX 6: FULL MODEL WITH NON-SIGNIFICANT PATHS REMOVED

Summary of estimates for latent variables.

Latent variables	Unstandardized estimate	Standardized estimate	S.e.	Z-value	P
Toxic disinhibition (ODST)					
ODS2*	1.000	0.811			0.000
ODS4	1.110	0.900	0.038	29.381	0.000
ODS6	1.081	0.876	0.035	30.735	0.000
Attitudes towards violence (ATTV)					
ATTV1	1.000	0.831			
ATTV2	0.910	0.757	0.036	25.563	0.000
ATTV3	0.606	0.503	0.031	19.507	0.000
ATTV4	1.048	0.871	0.041	25.761	0.000
ATTV5	0.895	0.744	0.034	26.320	0.000
Low self-control (LSELF)					
LSELF1	1.000	0.836			
LSELF2	1.091	0.912	0.038	28.950	0.000
LSELF3	0.976	0.816	0.029	33.747	0.000
Parental attachment (PATT)					
PATT1	1.000	0.830			
PATT2	1.095	0.909	0.024	45.771	0.000
PATT3	1.057	0.877	0.022	47.897	0.000
PATT4	0.994	0.824	0.024	41.949	0.000
PATT5	0.994	0.825	0.024	42.142	0.000
PATT6	0.905	0.751	0.022	41.667	0.000
Peer (friend) attachment (FRATT)					
FRATT1	1.000	0.858			
FRATT2	1.058	0.908	0.021	49.696	0.000
FRATT3	1.017	0.873	0.019	53.125	0.000
FRATT4	0.927	0.796	0.022	41.982	0.000
FRATT5	0.936	0.803	0.020	45.789	0.000
FRATT6	0.922	0.791	0.020	46.750	0.000
Neighborhood attachment (NHOOD)					
NHOOD1	1.000	0.868			
NHOOD2	0.992	0.860	0.019	52.689	0.000
NHOOD3	1.061	0.921	0.018	60.562	0.000
NHOOD4	1.062	0.921	0.017	61.622	0.000
NHOOD5	0.814	0.706	0.018	44.904	0.000

*Item numbers correspond to the order they were placed in the questionnaire; χ^2 = 2164.528, df=467, p<.001; GFI=.972; CFI=.977; RMSEA=.070; N=733.

Summary of regression coefficients.

	Unstandardized estimate	Standardized estimate	S.e.	Z-value	P
Offline deviance ~					
Attitudes towards violence	0.380	0.143	0.081	4.685	0.000
Low self-control	0.367	0.140	0.084	4.377	0.001
Parental attachment	-0.152	-0.057	0.061	-2.478	0.013
Peer (friend) attachment	0.215	0.084	0.058	3.677	0.000
Neighborhood attachment	-0.204	-0.080	0.052	-3.957	0.000
Gender	0.806	0.180	0.147	5.480	0.000
Social desirability	-0.310	-0.382	0.030	-10.363	0.000
Academic achievement	-0.025	-0.125	0.006	-4.000	0.000
Online deviance ~					
Toxic online disinhibition	0.425	0.296	0.049	8.598	0.000
Attitudes towards violence	0.233	0.166	0.050	4.632	0.000
Parental attachment	-0.126	-0.090	0.033	-3.840	0.000
Gender	0.760	0.321	0.101	7.525	0.000
Social desirability	-0.143	-0.335	0.018	-7.949	0.000
Academic achievement	-0.022	-0.202	0.005	-4.657	0.000

N=733.