Articles

An Exploration of Middle and High School Students' Perceptions of Deviant Behavior When Using Computers and the Internet

Annie J. Daniel

Abstract

If the current trend continues, the use of computer technologies and the Internet will increase for teaching and education. It is urgent that researchers study computer and Internet deviance. The purpose of this study was to explore middle and high school students' perceptions of deviant behavior when using computers and the Internet.

The target population for this study was middle and high school students. The accessible population included all students who attended a middle or high school in the East Baton Rouge Parish School, which has computers that are capable of accessing the Internet (1,150 students - 575 middle school students and 575 high school students).

Professor San-Yi Li of Taiwan designed the instrument used in this study. This instrument contained 66 questions and a scantron was used to record participants' responses. From the instrument, variables were selected from five sections - 1) students demographic characteristics 2) computer-related activities 3) students perceptions of deviant behavior when using computers and the Internet 4) students perception of their peers deviant behavior when using computers and the Internet 5) students ability to use computers and the Internet.

Results showed that the majority of students indicated they perceive their behavior as being not deviant when using computers and the Internet. Contrarily, the students indicated they perceive the behavior of their peers to be more deviant when using computers and the Internet. When the means of the Students Behavior Score and the Peers Behavior Score were compared, there was a significant different between the two scores. The Peers Behavior Score for deviance was much higher than the Students Behavior Score.

Introduction

"Any technology tends to create a new human environment."

-Marshall McLuhan

Marshall McLuhan declared this quote over forty years ago. Indeed, today's technology has created many new human environments and behaviors. Deviant behaviors on the computer and the Internet are rising as technology use increases (Hollinger, 1996b; Power, 2000; Vatis, 2000). This is evident in the enormous number of computer viruses that have been released recently causing businesses, educational institutions and personal computer users to become skeptical about performing familiar daily tasks (e.g., opening email messages).

For the purpose of this paper, deviant behavior for technology will include these activities: using computers and the Internet for illegal activities that violate local, state, and/or federal laws, inappropriate use; such as, a violation of the intended use of the Internet or computer, and/or its intended purpose and goal, obscene activities; defined as entering a pornography website or selling pornography goods on the Internet; using the Internet or computer to violate copyrights laws or other contracts such as institutional or third party copyright, license agreements and other contracts, intentionally disrupting the Internet traffic by spreading a computer virus, spreading rumors about another person on the Internet, intimidating and frightening another person on the Internet.

Deviant behaviors are a genuine concern since our society is rapidly moving from a typographic culture to a post-typographic culture (Provenzo, Brett & McCloskey, 1999). According to Provenzo, et al., "typographic culture is defined as a culture or society based around the technology of printing and post-typographic culture is defined as an electronic non-text-oriented culture." (p. i) With this movement, our culture and society is being transformed. People are communicating more by electronic mail and computers than by text or letter writing. Culturally, we are becoming more

dependent on computers and computer-based technologies (Provenzo, et al.).

For example, students are no longer learning to type with typewriters, but with word processor software. Those schools that are using typewriters are rapidly moving into the post-typographical era. Graphing calculators are required in math courses. Digital cameras are being used in art courses. In addition, art teachers are integrating computers with computer aided drawing software to teach computer drawing or graphic design to students.

Moreover, computer technologies are used to enhance various everyday classroom activities. Students may engage their time by playing computer-generated video games, simulations, drills and practice exercises, or tutorials. When students make class presentations, often the presentations will be integrated with interactive multimedia technology.   Integrating technology is well thought-out type of school reform that is used to improve the learning of all students; schools are moving rapidly to integrate computers and the Internet into their curriculum (Glennan & Melmed, 1996). Computers are considered a tool that when effectively used, will increase efficiency and productivity in a curriculum (Hunter, 1984). Researchers have designated the Internet as an equalizer of knowledge, because it allows the same knowledge to be accessible to all (Kearsley, 2000; Kent & McNergney, 1999; Milken Family Foundation, 1997; Papert, 1993). The cost of purchasing a computer has drastically declined in recent years. This decline in costs is allowing the Internet and computers to be more accessible to all by being available in public libraries and schools. In addition, this decrease in the cost of computers allows more of the United States' population to own personal computers.

Brief Overview of Technology Deviance

For the past ten years, the Internet and computers have radically changed the way schools interrelate with the world. The information super highway has become a reality. Students can use the Internet from home or school to travel vicariously all over the world, to gather information and new knowledge. As more travel on this electronic highway increases, maps to find information and rules to keep the journey safe is becoming vital to successfully completing the journey.

In <u>Understanding Media</u>, Marshall McLuhan (1964) stated the following:

> Any technology tends to create a new human environment. Script and papyrus created the social environment we think of in connection with the empires of the ancient world. The stirrup and the wheel created unique environments of enormous scope. Technology environments are not merely passive containers of people but are active processes that reshapes people and other technologies alike. In our time, the sudden shift from the mechanical technology to the electric circuitry represents one of the major shifts of historical time. (p. iv)

Marshall McLuhan predicted in 1962 a coming "Global Village." This global village is now reality, in the form of the Internet. His words are so prophetic, "Technology environments are not merely passive containers of people but are active processes that reshape people and other technologies alike" (p. 2). Due to the evolution of the Internet and computers, this very quotation is now reality. Computers and the Internet have "reshaped people and other technologies alike" (p. 2).

As our society is being transformed, computers and the Internet are being incorporated into almost every activity including education, communication, shopping, buying and selling goods, and business. In business, having a website and electronic address in order to show that your company is on the cutting edge of technology is important. Large corporations and small locally owned companies are on-line. Being on the Internet is a new way of attracting potential business. The education system has the same views about technology, having technology in the schools shows willingness for reform or improvement. With change and improvement, usually there are advantages and disadvantages that should be considered. One major disadvantage is that computers and the Internet are vulnerable to attacks and sabotage.

Voss (2000) referred to the Internet as "cyberworld," which is very much like our earthly world. It has highways (the World Wide Web), businesses (e-commerce), homes (homepages), schools, colleges, universities (distance learning), and it has people that travel in this world (by way of the Internet). Among these people, there are those that are deviant and

commit deviant acts on the superhighway and in cyberworld, but there are no police, highway patrol officers, and administrators of discipline or cybercops to stop these people from committing their deviant acts, although authorities are beginning to pursue actively such criminals (Power, 2000). This research will focus on what young people (middle and high school students) perceive to be a deviant act when using a computer or the Internet. After all, some of these students have been using computers since the age of two (National Public Radio, 2000).

The Internet is the electronic highway that provides a means of instantly accessing people, institutions, and an overwhelming amount of information from around the world.

Basically, the Internet is the world's largest computer network linking millions of people in more than 50 countries, on every continent of the globe. Most of the services are provided free by organizations that support host computers on the network. These typically include universities, corporations, governments, and small businesses that use mainframes and mini- computers to maintain and manipulate databases.

Due to the easy access of information on the Internet; the opportunity for misuse increases. Ethical behaviors by students, teachers, employees, and employers have become a major topic of concern. With the frequency of technology use, cyberattacks are also on the rise (Hollinger, 1996b; Power, 2000), as well as the question of ethical behavior by students and employees. A recent report on Cybercrime by Michael A. Vatis (2000) Director, National Infrastructure Protection Center, Federal Bureau of Investigation, indicated that cybercrime is on the rise:

> As Internet use continues to soar, cybercrime is also increasing exponentially. Our caseload reflects this growth. In FY 1998, we opened 547 computer intrusion cases; in FY 1999, that number jumped to 1154. Similarly, the number of pending cases increased from 206 at the end of FY 1997, to 601 at the end of FY 1998, to 834 at the end of FY 99, and to over 900 currently. These statistics include only computer intrusion cases, and do not account for computer-facilitated crimes such as Internet fraud, child pornography, or e-mail extortion efforts. In these cases, the NIPC and

> NIPCI squads often provide technical assistance to traditional investigative programs responsible for these categories of crime. (p. 12)

Secondary and college faculty have reported an increase in students cheating by computer (Benning, 1998). According to a George Mason University instructor, cheating is more easily done by using computers and the Internet. Anne Marchant (a college instructor) refers to these types of cheaters as "patchwork plagiarists." She says, "The students who copy and paste together passages from various articles they have found on the Internet, then turn in the work as their own." (p. 1). She teaches computer science and catches at least one such student every semester and this includes students using plagiarism in her computer ethics course. Marchant says she has no problem identifying the cheater, because "It's usually deadly obvious. The introduction will be written in broken English; then it will have this flawlessly written, almost doctoral-quality body; and then a conclusion that goes back to broken English." (p. 1) Students have access to dozens of web sites that aid them in cheating (on-line paper mills sell term papers) and students share tests and course materials via email or diskette (Benning, 1998).

In addition to using computers and the Internet to cheat, a few studies have been conducted to determine the types of on-line activities at colleges. Perry, Wilkinson, and Perry (1998) surveyed 509 college students to determine how many students engaged in seven on-line activities. There was only one question that addressed deviant behavior (Do you use the Internet to access adult material?); fifty (23%) of the 218 responded "yes" to this question.

Cost of Computer and Internet Deviance

The business industry is more susceptible and vulnerable to attacks (Power, 2000). Harrison (1999) reported that for the last three years, the Computer Security Institute statistics on cyberattacks showed a financial loss of more than $100 million a year. In Harrison's report, 521 security managers in the study reported breaches by outside crackers or hackers, and 30% of the respondents reported intrusions; which was up from 24% from the previous year. The Internet connection had the highest point of attack, 57% of the respondents. While 20% of the respondents had detected unauthorized

Table 1: Computer Crimes and Financial Loss

Types of Computer Crime	1997	1998	1999	2000
Theft of proprietary information	$20,048,000	$33,545,000	$42,496,000	$66,708,000
Financial fraud	$24,892,000	$11,239,000	$39,706,000	$55,996,000
Virus	$12,498,150	$7,874,000	$5,274,000	$29,171,700
Insider abuse of Net access	$1,006,750	$3,720,000	$7,576,000	$27,984,740
Sabotage of data or networks	$4,285,850	$2,142,000	$4,421,000	$27,148,000
Unauthorized insider access	$3,991,605	$50,565,000	$3,567,000	$22,554,500
Laptop theft	$6,132,200	$5,250,000	$13,038,000	$10,404,300
Denial of service	N/A	$2,787,000	$3,255,000	$8,247,500
System penetration by outsider	$2,911,700	$1,637,000	$2,885,000	$7,104,000
Active wiretapping	N/A	$245,000	$20,000	$5,000,000
Telecom fraud	$22,660,300	$17,256,000	$773,000	$4,028,000
Telecom eavesdropping	$1,181,000	$562,000	$765,000	$991,200
Spoofing	$512,000	N/A	N/A	N/A
Total Annual Losses:	$100,119,555	$136,822,000	$123,779,000	$265,586,240
Grand Total of Losses Reported (1997-2000): $626,306,795				

Source: Computer Security Institute - 2000; 643 Respondents for 2000

access or misuse of their websites in the past year from outsiders, 55% of the respondents reported attacks from the inside had increased by 10% from the previous year (Harrison, 1999).

For the past five years, the FBI and the Computer Security Institute have conducted a study of computer crime by administering the "Computer Crime and Security Survey" to information security professionals at corporations, financial institutions, government agencies, and universities across the United States.

The table shows the types of computer crime and amount of financial loss incurred over a period of four years by types of computer crimes. For several of the crimes, the financial losses have increased over the years of the study. The highest loss occurred in the 2000 survey (see Table 1) by theft of proprietary information ($66,708,000) and the lowest was telecom eavesdropping ($991,200).

A Review of Related Research on Students' Computer Usage

This review on related research was compiled from research of students in the United States. Researchers in the studies are from public and private institutions.

Where Students Use the Internet

According to a survey by the National School Boards Foundation (2000), "both school and home are important points of Internet access for children" and "by the time they are teenagers, nearly three out of four children are online." (p. 1)

Twenty-eight percent of the children surveyed by the National School Board Foundation (2001) reported that they access the Internet from home. However, when parents were surveyed, 69 percent of the parents reported their children have access to computers at home and are able to log onto the Internet.

Overall, 23 percent of all children surveyed are accessing the Internet from school. Fifty-six percent of parents whose children have access to the Internet at home reported that their children also log onto the Internet at schools or preschools. (p. 1)

ity

Reasons Students Use Computers and the Internet

Researchers at the National Center for Educational Statistics (2000) revealed that the main reason families buy computers and connect to the Internet is for educational purposes.

About two thirds (64 percent) of family households surveyed have a home computer. The most common reasons parents cite for buying home computers is children's education (36 percent) and business use (27 percent). Likewise, the most common motivation parents cite for their child to use the Internet from home is their education (45 percent). Education is the single most frequently cited motivation (39 percent) for parents who anticipate obtaining home Internet access as well, followed by email (17 percent) (p. 1).

Additionally, student ages 13 to 17, in the National School Board Foundation (2001) study, cited education and schoolwork (32 percent) as the main reasons for usage. This study also reports that students use the Internet at least once a week for schoolwork and general learning activities not connected to school.

Frequency of Computers and the Internet Use

The National Center for Education Statistics (1997) reported the frequency of computer and Internet use by students. This report disclosed information pertaining to students in the fourth, eighth and eleventh grades for five years (1984 to 1994). The categories for frequency of use were never, less than once a week, once a week, 2 or 3 times a week and every day.

Results of this study showed that in 1984 the majority of students in each grade level responded that they had never used a computer (4th grade-61.2%, 8th grade-66.7%, 11th grade-55.0%). However, by 1994, the majority of the students in all grades reported using a computer less than once a week, once a week, 2 or 3 times a week, or every day (4th grade-83.5%, 8th grade-72.4%, 11th grade-73.9%).

Computer use by students has increased over the years. Students are using computers at home and at school and using them for learning activities and pleasure (chatrooms, emails, playing games, listening to and recording music, etc.). (National Center for Education Statistics, 1997)

Computer Usage by Gender

In general, girls use computers and the Internet as much as boys, but in different ways (National School Boards Foundation, 2000). When it comes to competency, girls are as competent as boys. Girls are more likely to use the Internet to e-mail friends and family than boys. Girls are also more likely to use the Internet for schoolwork and chatrooms than boys. Boys reported using the Internet more for entertainment and games.

According to their parents, 48 percent of 9- to 12-year-old boys and girls are online, while 71 percent of 13- to 17-year-old boys and girls are online. Both younger and older girls seem just as likely to use the Internet as their male counterparts; 50 percent of 9-to 12-year-old girls use the Internet, compared to 46 percent of boys. In the 13- to a 17-year-old age bracket, 73 percent of girls use the Internet, compared to 70 percent of boys. (National School Boards Foundation, 2000, p. 6)

Computer and Internet Use by Race and Income

"Schools have the opportunity to help narrow the gap between the haves and have-nots with Internet access." (National School Boards Foundation, 2000 p. 7) "Parents with an income of $70,000 or more reported that one or more of their children use the Internet, compared to 35 percent of parents with incomes of less than $40,000. Fifty-seven percent of white parents report that their children use the Internet, compared to 23 percent of African-American parents." (National School Boards Foundation, 2000, p. 7)

Among students with parents who have an income of $40,000 or less, 76 percent of 9-to 17-years-old use the Internet at school; while 68 percent of children of wealthy families and 54 percent of children in middle class families use the Internet at school. Schools are the main source of Internet use for children that are from low-income families (National Center for Education Statistics, 1999 & National Center for Education Statistics, 1998).

Eighty percent of African-American families with children age 9 to 17-years-old use the Internet at school. This is compared to only 16 percent who reported they log on from home (National School Boards Foundation, 2000 & National Center for Education Statistics, 1999).

This report is consistent with findings from a study by the National Public Radio (2000). Results of this study revealed a "digital divide" between those with lower incomes and less education. "Americans with lower incomes are less than half as likely as those with higher incomes to have an Internet connection at home" (p. 1). Furthermore, "there is a gap of 11 percentage points between blacks and whites using computers at work (46% vs. 57%); but there is a larger, 22 point gap between blacks and whites who have a computer at home (51% vs. 73%). Similarly, a gap of 8 points exists between blacks and whites using the Internet at work (21% vs. 29%) compared with a larger 19 point gap in access to the Internet or e-mail at home (38% vs. 57%). There is a 17 percentage point gap in home-computer ownership between low-income blacks and low-income whites" (p. 5).

The Study

If the current trend continues, the use of computer technologies and the Internet will increase for teaching and education. It is urgent that researchers study computer and Internet deviance that may occur in the educational environment. Although a limited amount of research has been performed to determine the types of deviant behavior students use on the Internet and on computers, the opportunity to perform deviant acts increases with the integration of technology in education.

Methodology

Population and Sample - The target population for this study was defined as middle and high school students. The accessible population included all students who attended a middle or high school in the East Baton Rouge Parish School System (EBRPSS) with computers that are capable of accessing the Internet. A convenience sample of approximately 1,150 students was surveyed (575 middle and 575 high school students). Principals at these schools were notified of the study and asked to identify teachers with Internet access in their classrooms. The school principals decided which teachers would participate in the study, which determined the students to survey.

Purpose and Objectives of the Study-The primary purpose of this study was to explore middle and high school students' perceptions of deviant behavior when using computers and the Internet. In order to answer the research problem, the following six objectives were used to guide the researcher:

1. Describe the middle and high school students on the following selected demographic characteristics: a) Gender, b) Age, c) Ethnicity, d) Grade in School, e) Type of School (middle or high school), f) Academic Achievement as Perceived by the Students, g) Religious Affiliation, h) Students' Interaction with Teachers, i) Students' Interaction with Other Students

2. Describe the middle and high school Students' Behavior Score.

3. Describe the middle and high school Students' Peers' Behavior Score.

4. Compare the Students' Behavior Score of middle and high school students on selected demographic characteristics and perceptions of computer-related activities.

5. Compare the Students' Behavior Score and the Peers' Behavior Score.

6. Determine if a relationship exists between the Students' Behavior Score and the Peers' Behavior Score on selected demographic characteristics and perceptions of computer-related activities.

Instrumentation and Procedure for Data Collection-The instrument for this study was developed by Professor San-Yi Li in Taiwan (who gave the researcher permission to use his instrument for this study) and revised by the researcher. Several key demographic questions were added to the survey, which were: "What is your race or ethnicity?," "Is there a working computer in the home where you live?," "If there is a working computer in the home where you live, is it connected to the Internet?," and "What type of school do you attend?" The original survey had 62 questions. After the revisions, the number of questions increased to 66. Not all of the questions were used for this study. Questions that addressed the objectives of the study were selected as variables to be used in the study. The selected variables were systematically copied into a file. The primary variables studied were categorized as: 1) students' demographic characteristics, 2) computer-related activities, 3) students' perceptions of deviant behavior when using computers and the Internet, 4) students' perception of their peers' deviant behavior when using computers and the Internet, and 5) students' ability to use

computers and the Internet.

Data were collected during the spring semester of 2000. The procedure for collecting the data was as follows:

1. The EBRPSS Director of Academic Accountability was contacted to obtain approval to conduct a research survey in the middle and high schools in the system.

2. The parish Director of Technology (was contacted by telephone and visited in person by the researcher to obtain the list of schools) identified the seven middle and seven high schools with computers that had access to the Internet.

3. Principals of the schools identified were then contacted by faxed letter and telephone and a request was made to survey students with computer and Internet usage experience.

4. Those teachers and students selected by the school principals were informed of the general objectives of the research by the principal and the researcher. Students were asked to participate in the study voluntarily.

Once the subjects agreed to participate in the research, they were informed that this project required them to complete a survey that consisting of 66 questions. Students were given a pencil and scantron sheet to record responses and an additional sheet with open-ended questions to respond to. Students were allowed about 45 minutes to complete the survey, but additional time was allowed for those students needing it. Five hundred seventy five middle school students and 575 high school students responded to the survey.

Summary of Findings

For the first objective of the study, participants were asked several questions that pertained to demographics, (e.g., age, ethnicity, grade level). Participants' ages ranged from 13 to 17 years old. As for ethnicity, the majority of the students responding reported their ethnicity as African American, with the next largest group of respondents being White. The grade level of the students ranged from 7th to 12th grade, with the 11th or 12th graders having the largest number of respondents. Students in the study were either in middle or in high school, and most of them rated their academic achievement as good with a strong religious affiliation. Additionally, a large portion of the students interacted with their classmates and teacher regularly.

Objective two was to describe the middle and high school Students' Deviant Behavior Score, which indicates how often a student perceives he/she is using deviant behavior when using the computer or Internet. According to the Students' Deviant Behavior Score, the majority, 869 (79.6%), of the responding students indicated that they displayed no deviance or some deviant behavior while using the Internet. Only a small percentage of students indicated deviance.

In addition to the students' score, students were asked to describe their peers' level of deviance. This data was collected by using the Peers' Behavior Score, which indicates how often a student perceives his/her classmate to be displaying deviant behavior when using the computer or Internet. The results of this score indicated that the majority (1,016, 81.5%) of the students perceived their classmates to be displaying deviant behavior often or very often when using the Internet and computers. The researcher believes that if the students' peers are engaging in this type of behavior than a larger number of students may be engaging as well, but are not disclosing this information. Apparently, students feel more comfortable disclosing what others are doing, rather than what they are doing.

Objective four compared the Students' Behavior Score on selected demographic characteristics and perceptions of computer-related activities, by using a Chi-square procedure to determine if a relationship existed. When comparing the Students' Behavior Score, the following findings were discovered about gender: males indicated displaying more deviance than females when using the Internet and computers. Results indicated a statistically significant relationship between gender and perceived deviance. It appears that males are more likely to display deviance when using the Internet and computers than females. The overall results showed that 27.9% of the males and 12.6% of the females reported deviance. There were twice as many males as females that reported deviance when using the Internet and computers.

When considering deviance and age, two age groups showed the lowest percentage of deviance while using computers and the Internet, the 13 and 17 year olds. Students ages 14, 15 and 16 had the largest percentage of deviance reported. Furthermore, in all of the age groups the majority of the students indicated that they did not display any deviance.

Additionally, the ethnic group indicating the largest percentage of deviance when using the Internet and computers were the Spanish/Hispanic students. The second largest percentage of students indicating some deviance was Asian students. This is comparable to a study by Hollinger (1996b) of college students. He researches crime by computer as it correlates with software piracy and unauthorized account access of college students. He reported that Asian and Hispanic students indicated the highest levels of piracy.

When reporting academic achievement, the majority of students reported their academic achievement as being good, and most of the students perceived themselves as displaying no deviance or some deviance when online. This test resulted in a significant relationship between academic achievement and Student Behavior Score. Students indicating poor or fair academic achievement reported the highest percentage of deviance. Of the students that reported "poor" achievement, 38.1% indicated deviance, and the students that reported "fair" achievement had 25.7% to indicate deviance compared to those students that indicated "good" (17%) or "excellent" (17.4) achievement.

For religious affiliation, those students that indicated a strong or very strong religious affiliation also had the largest percentage of students that did not display deviance when using computers and the Internet. Religious affiliation did not result in a statistically significant relationship with Student Behavior Score. When comparing the no religious affiliation with strong religious affiliation (the group that is closest in numbers), there is no significant difference. The researcher believes these students are either just honest because of their religious affiliation, or religious affiliation for some is not as effective as for others in developing ethics. After all, the students with no religious affiliations were able to admit what they are doing online.

With regard to students' interaction with teachers, most of the students indicated that they interacted with their teachers. Interacting with teachers did not have a significant relationship with the Student Behavior Score. Although there was not a significant difference between level of interaction with teachers and Students' Behavior Score, students that reported no interaction with teachers reported deviance at 26.3%. This is compared to the students who reported they interacted with their teachers "some" (15.9%), "often" (20.1%) and "very often" (22.5).

The students that interacted with other students reported the least amount of deviance when using computers and the Internet. The majority of the students indicated that they interacted with their classmates. Furthermore, there was a significant relationship between the Student Behavior Score and the level of interaction students have with their classmates. Students that reported no interaction with classmates had the highest overall percentage of deviance (35.2%). This is compared to the other levels of interaction that gets lower as the level of reported interaction get larger ["some" (21.8%), "often" (18%) and "very often" (17.4)]. Consequently, students that alienate themselves from others are engaging in more deviant activity when using computers and the Internet.

A high proportion of the students indicated that they spend "much" time online and display very little deviance when using the Internet and computers. This analysis was interesting because some of the students indicated that they do not spend any time online, but they displayed deviant behavior when online (time spent online "none," 28.6% of the students indicated deviance online). Students evidently misunderstood the question. Students' time spent online have a significant relationship with Students' Behavior Score. Students that reported spending more time online has the highest overall percentage of deviance -"very much" (22.2%) and "much" (21.2%). This is compared to the other students that reported spending less time online, "little" (15.5%).

As related to hours per day spent on the Internet, when asked specifically how many hours per day they spent on the Internet, students could relate to this question and responded more accurately. Hours spent online are highly related to Student Behavior Score. Students

that reported spending the least amount of time online reported the lowest percentage of deviance (2 hours, 15.3%). This is compared to the other amounts of time spent online, in which the percentage of deviance increases as more time is spent online (3-4 hours, 19.1%; 5-6 hours, 37.2%; 7-8 hours, 44.7%; 9 hours, 46.7%). It is highly recommended that students' time online is supervised and coupled with a program that will monitor or control their online activity.

When asked whether there was a working computer in the home, the majority of the students indicated that they had a working computer in the home. However, a smaller number of students indicated that they did not have a computer in the home. A working computer in the home was shown to be significantly related to the Student Behavior Score. The percentages for deviance were higher for those students not having a computer in the home. This relationship could mean that students do not need a computer in the home to engage in deviant acts on computers and the Internet.

Kevin Mitnick (one of the most famous computer hackers) did not own a computer, but he had been engaging in deviant acts with computer since he was a juvenile. Students with a working computer in the home may be more familiar with computers. Students may not realize or not have been taught that certain behaviors are deviant, therefore they may not be reporting their behaviors accurately. The significance may be how students with computers in the home view what is actually deviant behavior verses those without a computer in the home. Coldwell (1996) concluded that students from machine-based disciplines (computer environments) are less able to predict the social consequences of computer crime than those from people-based disciplines (no computers).

Due to the fact that students are being introduced to computers and the Internet at an earlier age, technology ethics needs to be introduced at all levels of education starting when computers are first introduced to the student. Having a computer in the home allows more chances of deviance to occur, despite the fact that a student may not realize what is happening. Therefore, supervision and ethics teaching become a necessity at home and away from home.

Objective five compared the Student Behavior Score and the Peers' Behavior Score. From the comparison of the means of the Peers' Behavior Score and the Students' Behavior Score, students' perceptions of themselves and their classmates are very different. Students perceive their peers are displaying deviant behavior "often" and "very often" on computers and the Internet. However, students perceive that they are not engaging in "deviance" or "some deviant" behavior.

The researcher believes that if the students' peers are engaging in this type of behavior, then a larger number of students is engaging as well, but is not disclosing this information. Students may feel more comfortable disclosing what others are doing. Students may not want to admit displaying deviance, but it is easier to be more open when discussing someone else's behavior. Therefore, the two scores can be used to gauge the amount of actual deviance being displayed.

The final objective examined whether or not a relationship existed between the Student Behavior Score and the Peers' Behavior Score on selected demographic and perceptual characteristics and computer-related activities. This analyses indicate that relationships are statistically significant between gender, hours spent on the computer, access to a computer with Internet, ethnicity and the ability to use the Internet for how students' perceive their peers' deviant behavior when using the computer and Internet. Likewise, results indicate that relationships exist between gender; hours per day spent online, access to a computer with Internet, ethnicity and a working computer in the home when examining how students perceive their behavior when using the computer and the Internet.

In both analyses, gender was the best predictor for how students may perceive deviance scores; hours spent on the computer is the next best predictor for both scores. The more time students spend online is likely to influence how deviance is perceived. Spending more time on computers and the Internet may lead students to perceive that their deviant behaviors are not deviant, especially if the students are committing deviance and nothing is happening. There may be no one to supervise students' online behavior. Consequently, students feel the behavior is not deviant.

Conclusion

The primary purpose of this study was to explore what middle and high school students perceive as deviant behavior when using the computer and the Internet. Based on the findings, it can be concluded that students do not perceive most of their behaviors on the Internet and computers as deviant. More specifically, the Peers' Behavior Score mean is higher than the Students' Behavior Score. Therefore, students do not perceive their behaviors as being as deviant as their peers. This attitude can be correlated to a theory known as the third person effect (Perloff, 1989). Cohen, Mutz, Price, and Gunther, (1988) defined the third person effect as how people represent themselves in relation to others. The students' image of themselves is more ethical than the students' image of their friends. Hence, their classmates are the ones that visit the pornography websites, access other people's websites without permission and perform other deviant acts when using the Internet and computers.

Additionally, this study will add to the small, but growing body of knowledge concerning students' perceptions of deviance when using the Internet and computers. We have gained an image of how students use the Internet and computers; how students spend some of their time online and how much time they spend using computers and the Internet. From this information, the following profile is generated of the possible characteristics of a student that may engage in computer or Internet deviance:

Male, possibly Asian, Hispanic or Other; ages 14-16;

Poor to fair academic achievement;

No religious affiliation;

No interaction with classmates or teachers;

From 5 to 9 hours a day spent on the Internet and/or computer;

May or may not have a computer at home.

When analyzing the above profile, keep in mind what Bologna (1981) perceived. He indicated that younger computer abusers find it to be challenging to beat the system, establishment or institution. The motive is not always to harm others or for financial gain.

To conclude, the researcher recommends the following to avoid or decrease the chances of deviance when using computers and the Internet at school and home:

- Decrease the size of computer classes to 18-22. One teacher can better manage this number.

- Teachers and parents should encourage students to talk about what they are doing on the computer and the Internet.

- Find out whom they are talking to in chatrooms and via instant messaging, as well as the types of websites they are visiting.

- Supervise their online activity. Students should not be alone for lengthy periods of time. When supervision is not possible, use software or hardware that will help to limit online activity.

- Schools that offer computer classes and access to the Internet should include information on appropriate computer and Internet behavior and ethics in their curriculum. Awareness is the first step to prevention and reducing the potential of abuse.

With the integration of computers and the Internet into the curriculum, there must also be responsibility. If deviance is to be avoided or decreased, all participants must take responsibility, which includes users and the suppliers. Educators and parents must be vigilant in their effort to discourage computer and Internet deviance.

Annie J. Daniel is an assistant professor of education at Dillard University, New Orleans, LA. She is a Member-at-large of Epsilon Pi Tau.

References

Cohen, J., Mutz, D., Price, V., & Gunther, A. (1988). Perceived impact of defamation: An experiment on third-person effects. *Public Opinion Quarterly, 52*(2), 161-173.

Coldwell, R. (1996). University students' attitudes towards computer crime: A Research note. In R. C. Hollinger (Ed.), *Crime, Deviance and the Computer* (pp. 413-416). Aldershot, England: Dartmouth.

Glennan, T., & Melmed, A. (1996). *Fostering the use of educational technology*. Santa Monica, CA: Rand.

Hollinger, R. (1996). Hackers: Computer heroes or electronic highwaymen? In R. C. Hollinger (Ed.), *Crime, Deviance and the Computer* (pp. 45-56). Aldershot, England: Dartmouth.

Hunter, B. (1984). *My students use computers*. Reston, VA: Reston Publishing Company.

Kearsley, G. (2000). *Online education: Learning and teaching in cyberspace*. Belmont, CA: Wadsworth.

Kent, T. & McNergney, R. (1999). *Will technology really change education?* Thousand Oaks, CA: Corwin Press, Inc.

McLuhan, M. (1962). *The Gutenberg galaxy: The making of typographic man*. Toronto: University of Toronto Press.

McLuhan, M. (1964). *Understanding media: The extensions of man. New York*: New American Library.

Milken Family Foundation. (1997). *Preparing our young people for a changing world: A Milken exchange on education technology*. Santa Monica, CA: Author.

National Public Radio. (1999). Survey shows widespread enthusiasm for high technology. NPR Online. http://www.nsbf.org/programs/specials/poll/technology/index.html.

Papert, S. (1993). *The children's machine: Rethinking school in the age of the computer.* New York: The Free Press.

Perloff, R. (1989). Ego-involvement and the third person effect of televised news coverage. *Communication Research, 16*(4), 236-262.

Power, R. (2000, Spring). 2000 CSI/FBI computer crime and security survey. *Computer Security Issues and Trends, 6*(1), 1-15.

Provenzo, E, Brett, A., & McCloskey, G. (1999). *Computers, curriculum, and cultural change*. Mahwah, New Jersey: Lawrence Erlbaum Associates.

Vatis, M. (2000) Director, National Infrastructure Protection Center Federal Bureau of Investigation on Cybercrime, Before the Senate Judiciary Committee, Criminal Justice Oversight Subcommittee and House Judiciary Committee, Crime Subcommittee Washington, D.C. http://www.fbi.gov/pressrm/congress/congress00/vatis022900.htm

Voss, N. (2000). Crime on the internet. Jones Telecommunications and Multimedia Encyclopedia. http://www.digitalcentury.com/encyclo/update/crime.html