THE EFFECT OF CYBERSTALKING ON OFFLINE VICTIMIZATION

by

DEVEN DOUGLAS

(Under the Direction of Jody Clay-Warner)

ABSTRACT

Research has found that experiencing victimization significantly increases the risk of subsequent victimization, which is consistent with state dependence theory. This thesis investigates whether cybervictimization similarly affects risk of offline victimization, as well as whether psychological distress and gender play in role in the link between cybervictimization and risk of offline victimization. Using data from the National Crime Victimization Survey (2018-2020) and the 2019 NCVS Supplemental Victimization Survey, I test arguments derived from routine activities theory about the role of cybervictimization in shaping offline victimization risk. I used propensity score matching with inverse probability treatment weighting to isolate the effect of cybervictimization. Logistic and firth regressions with IPTW estimates showed a positive and significant relationship between online victimization and offline victimization. Psychological distress did not significantly predict subsequent offline victimization experiences. Further, gender was not a significant predictor of property or violent crime victimization.

INDEX WORDS: Criminology, Victimology, Cybervictimization, Revictimization

THE EFFECT OF CYBERSTALKING ON OFFLINE VICTIMIZATION

by

DEVEN DOUGLAS

BA, Louisiana State University, 2023

BA, Louisiana State University, 2023

A Thesis Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment of the Requirements for the Degree

MASTER OF ARTS

ATHENS, GEORGIA

2025

THE EFFECT OF CYBERSTALKING ON OFFLINE VICTIMIZATION

by

DEVEN DOUGLAS

Major Professor:	Jody Clay-Warner
Committee:	Thomas McNulty
	Justine Tinkler

Electronic Version Approved:

Ron Walcott
Vice Provost for Graduate Education and Dean of the Graduate School
The University of Georgia
August 2025

DEDICATION

I dedicate this to my many friends, old and new, who have either helped with the production of this or my overall well-being. Without my ragtag group of misfits, I likely would be in (or done with, I should say) law school. Depending on how this pans out, thank you.

ACKNOWLEDGEMENTS

I'd like to start by thanking my major professor, Dr. Jody Clay-Warner. She is a harsh reviewer, but never unfair. It's hard to imagine anyone having been a better fit for me than her. To my first ever advisor, Dr. Skylar Gremillion, who helped nurture my initial interest in research to what it is now. Endless gratitude to Drs. Sarah Groh and Cerenity Collins, my unofficial first advisors. You were at the end of your graduate student journey as I had just begun mine but still took the time to get to know me and my interests so genuinely. They taught me so many of those unknown but necessary elements of being a graduate student. I hope that I've been able to extend even a bit of that same attention to the next cohort, and those who will follow.

To my many family and friends broadly, who have supported me personally through my time here. To my best friends Kennedi Boatner and Jewel DeJan, who have always kept me honest and lively. I wouldn't have chosen graduate school without your encouragement. I also want to thank Ziding Shen, who gave me advice on coding as I learned how to navigate such a vast array of datasets to make this project happen. Her ability to think like our advisor made revisions less daunting. To Benjamin Pham and Ciara Peebles, who have been so welcoming and loving from the moment I was recruited for this program. You've both made this graduate school experience less lonely. To my cohort, who didn't let our sizable age gap stop them from being friendly towards me. I'm glad we were all able to make it to this milestone together. And finally to the graduate students at UGA overall, whom I've gotten to know and appreciate for their dedication to research, but also each other.

Much love to all of you.

TABLE OF CONTENTS

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

CHAPTER 1

INTRODUCTION

Stalking is continued unwanted harassment that causes feelings of distress. It can have adverse effects on psychological health, is associated with increased risk of physical harm, and disrupts victim's routine activities (Abrams and Robinson 2002). There is a large literature on stalking, which is one of the only crimes that is defined by its effect on the victim. Considerable research documents the negative effects of stalking (Dreßing et al. 2014; Pathé and Mullen 1997). The social responses to stalking (McKeon, McEwan, and Luebbers 2015), perceptions of what is considered to be stalking (Scott and Sheridan 2011), law enforcement response to incidents of stalking and conviction rates (Brady and Nobles 2017; (Jordan et al. 2003) have additionally been well researched.

While stalking is a clearly and consistently defined phenomenon, *cyberstalking* is more difficult to define and measure. Wilson and colleagues (2022) define cyberstalking as the continued intentional harassment of an individual by another individual or group over a specific period using the internet. Like stalking, it involves a particular focus on a victim's feelings of unease from the harassment they experience. However, a cemented requirement for fear is far less involved in operative definitions. Like stalking more generally, cyberstalking has been widely studied (Dreßing et al. 2014; Jansen van Rensburg 2017; Short et al. 2015).

Little research, though, has examined the relationship between cyberstalking and offline victimization. Specifically, we do not know how experiencing cyberstalking affects the likelihood of future offline victimization. Researchers have found a positive relationship between

stalking and psychological distress, with effects comparable to post-traumatic stress disorder (Dardis, Amoroso, and Iverson 2017; Diette et al. 2014; Westrup et al. 1999). People who experience stalking are also more vulnerable to subsequent violent victimization (Cougle, Resnick, and Kilpatrick 2009; McCart et al. 2012). This suggests that cyberstalking may also increase the risk of violent victimization, though published research has not examined this question.

Here, I use state dependence theory and routine activities theory to understand the relationship between cyberstalking and offline victimization. State dependence theory argues that victimization affects the likelihood of experiencing further victimization (Pease 1998). I will use it to explain why a psychologically distressed victim would appear to be a more suitable target to potential offenders, thus increasing their likelihood of experiencing subsequent offline victimization. Routine activities theory examines crime as an event that can occur when a motivated offender encounters a suitable victim in the absence of a capable guardian. I use it to explain how cybervictimization is a tool through which offenders increase the suitability of their would-be victims for offline victimization. Additionally, I will incorporate literature on gendered experiences of cybervictimization to explain the effect of gender on victims' psychological distress.

This study seeks to fill the gaps in knowledge about the relationship between online and offline victimization. This project has two main goals: The first goal is to understand how online victimization may increase vulnerability to offline victimization, and, if there is a relationship, to determine if higher reports of psychological distress among those affected by cybervictimization relates to an increase in subsequent offline victimization. The second goal is to build on emerging work investigating the gendered dynamics of online and offline victimization. I utilize

propensity score matching, which models the effects of cyberstalking on offline victimization controlling for underlying differences between victims and non-victims (population heterogeneity) (Rosenbaum and Rubin 1983).

CHAPTER 2

THEORETICAL FRAMEWORK

Theories: State dependence vs. Population heterogeneity

State dependence theory stipulates that victimization changes individuals and/or their social environments in ways that alter the risk of future victimization (Pease 1998). Positive state dependence theory predicts that initial victimization increases the risk of subsequent victimization, largely through victim engagement in high-risk activities, withdrawal from prosocial activities and institutions, and changes in the way they are treated by others (Pease 1998). Negative state dependence theory predicts that people experience a victimization event as motivation for changing behavior in ways that minimize future victimization risk. Fundamentally, both versions of state dependence theory view victimization as an incident that alters the life course and, in doing so, affects the likelihood of subsequent victimization.

It is necessary to control for population heterogeneity as a competing theoretical explanation when testing state dependence theory. The population heterogeneity perspective argues that the relationship between initial victimization and repeat victimization is spurious, as time-invariant factors (Ousey, Wilcox, and Brummel 2008) and role behaviors account for the risk of both initial and subsequent victimizations (Hindelang, Gottfredson, Garafalo 1978). For example, Cho and colleagues (2022) found that family violence and peer delinquency mediated the effects of bullying on victimization outcomes for Black girls. In this example, higher rates of bullying can be explained by pre-existing conditions (familial violence and peer delinquency)

that themselves introduce risk for victimization, rather than bullying itself being a significant predictor of future bullying.

There is support for positive state dependence processes in the field of victimization. Clay-Warner and colleagues (2016) found that those with a high underlying risk for violent victimization were more likely to be subsequently victimized after controlling for the effects of population heterogeneity. This suggests that even after controlling for predisposing risk factors, cybervictimization may be a significant moment in someone's life course that contributes to increased odds of victimization. Ousey and colleagues (Ousey et al. 2008) similarly found support for state dependence theory, though strength of support varied depending upon the statistical modeling approach.

The debate between state dependence and population heterogeneity as explanations for victimization risk has been ongoing in large part due to limitations in the ability to control for confounding variables. Findings are frequently limited by the strength of the analytical method, model fit, and thoroughness of data in the presence of known and unknown confounders. As research addressing this debate is limited, and new analytical methods capable of properly testing the theories become available, this study must address both theories to contribute to the debate.

This project builds on state dependence literature through the exploration of the effect of online victimization on offline victimization. By examining the effects of cybervictimization on the risk of offline victimization, I will offer a more complete understanding of how people are affected by cybervictimization, with specificity to cyberstalking. Additionally, utilizing propensity score matching with inverse probability treatment weighting will allow for a test of the state dependence theory that controls for population heterogeneity without overcontrolling

for time variant variables that may mediate the relationship between cybervictimization and offline victimization.

Theory: Lifestyle-Routine Activities

To understand how cybervictimization increases risk of offline victimization, I turn to routine activities theory. According to this theory, crime can only occur when there is a space-time convergence between a motivated offender and a suitable victim, in the absence of a capable guardian (Felson and Cohen 1980). The motivated offender is described as someone with sufficient desire to commit a crime. The suitable victim is an individual who appears vulnerable to the would-be offender. Capable guardianship is a person or thing that can sufficiently deter criminal activity. I utilize this framework to explain state dependence within a lifestyle-routine activities framework (Holt and Bossler 2008).

While initially constructed as a macro-level theory, routine activities theory also applies on the micro-level. Micro-routines are the constrained contextual movements of an interaction, or event processes, that compose macro-routines within the routine activities framework (Olaghere and Lum 2018). In this way, integral interactions between motivated offenders, suitable victims and capable guardians determine whether and when, exactly, crime will occur. For example, Jean (2008) uses micro-routines to explain differential outcomes within areas that should be similarly criminogenic, explaining the difference by analyzing which areas are most suitable to the micro-routines of crime commitment as a result of uneven development. I similarly utilize this approach, arguing that offenders continually engage victims because of microprocesses that make it easier to victimize them.

Lifestyle theory is similar to routine activities theory, and its probabilistic approach to crime is complemented by the mechanisms of crime detailed in routine activities theory (Pratt and Turanovic 2016). Lifestyle theory describes the propensity for victimization as related to an individual's everyday routine activities, as well as their role behaviors, which inherently influence the likelihood of and response to experiencing victimization (Hindelang, Gottfredson, and Garofalo 1978). Risky behaviors involve everyday activities that bring an individual into close proximity to risky actors at particular times in specific spaces, a convergence in space and time that alters the risk of victimization.

Because of the similarities between routine activities theory and lifestyle theory, they are frequently used together as "lifestyle-routine activities theory (Maxfield 1987; Pratt and Turanovic 2016). Lifestyle-routine activities theory serves as a synthesis of both theories, highlighting their similarities and capitalizing on their differences to properly understand how risk of victimization operates, in this case within the online space. Lifestyle theory is central to understanding the significance of behaviors in the perpetration of crime, but routine activities create an environment where crime is possible. To understand cybervictimization, I utilize both theoretical perspectives.

CHAPTER 3

LITERATURE REVIEW

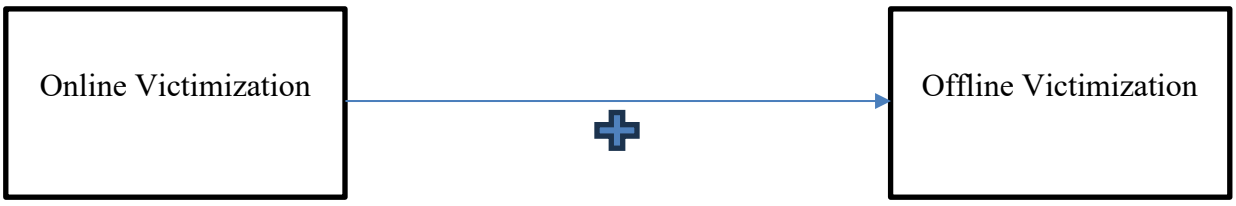
Cybervictimization

Online activities are quite varied in nature, so it should be expected that online interactions reflect different levels of risk. Varying styles of cybervictimization (scams, hacking, phishing, cyberstalking, etc.) come with their own risky behaviors that alter the probability of being victimized due to differences in what constitutes a risky space, contributes to the identification of a suitable victim, reduces the effectiveness of an otherwise capable guardian, and reduces the capacity of motivated offenders to do harm to others. For the purposes of this study, it is important to understand the different ways in which cybervictimization may increase the risk of victimization.

Having information about a victim increases the risk of victimization, as cyber aggressors can utilize a vast array of information about a victim (e.g., home address, places they frequent, their social network) to understand their location and plan more effectively how to victimize them (Johnson, Summers, and Pease 2009)**.** Cybervictimization may then increase the likelihood of experiencing offline victimization by granting offenders more opportunities to victimize their target. From a routine-activities framework, the offender can isolate the victim from capable guardianship by knowing when guardians are absent in their schedule. In other words, the victim becomes a more suitable target when the motivated offender has knowledge of when they are most vulnerable. This leads to the first hypothesis.

Hypothesis 1: People who have experienced cyberstalking are more likely to experience offline victimization than those who have not experienced cyberstalking, controlling for underlying propensity for victimization.

Figure 1 – Online Victimization increases Offline Victimization likelihood



The significance of psychological distress

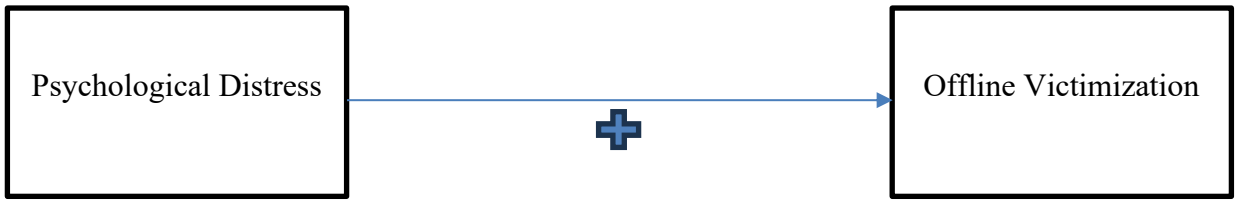
Psychological distress is hypothesized to increase the likelihood of subsequent offline victimization amongst those who have experienced cybervictimization because psychological distress is associated with the disruption of daily activities (Short et al 2015). Psychological distress is conceptualized specifically as the emotional distress an individual experiences in response to their cybervictimization. Psychological distress reflects a broader range of emotional responses than does fear, which is often assumed to be the primary emotional reaction to victimization. Fissel and colleagues (2022) found that most respondents did not experience feelings of fear in response to cybervictimization, and those who did were equally likely to be feeling an additional emotion, as well. Fear responses varied when the experience made them feel threatened and harassed, or if they were spied on, tracked, or threatened with the exposure of private information, with an additional positive relationship between fear and length of time online/internet use. Within a lifestyle-routine activities framework, respondents with higher internet use had greater victimization risk due to more frequent proximity to potential offenders.

Victims may also subconsciously display non-verbal cues that make them appear to be accessible targets for would be perpetrators. These cues are known as signals of vulnerability (Grayson and Stein 1981; Gunns, Johnston, and Hudson 2002). Uneven walking gait, for example, is one signal of vulnerability that researchers have used to explain target suitability (Book, Costello, and Camilleri 2013; Grayson and Stein 1981; Winkel and McCormack 1997)**.** In addition, Ward and colleagues (2017) focused on the inability of psychologically distressed participants to identify potentially dangerous signals in would-be offenders, finding a significant negative effect between psychological distress and being able to detect neuroticism cues in the face (Ward et al. 2017)**.**

Cybervictimization may then increase the likelihood of offline victimization because cybervictimization causes people to display signals of vulnerability, and would-be offenders identify suitable victims through these signals. Culatta and colleagues (2020) found support for this argument when utilizing depression as a mediating variable between sexual victimization and later instances of sexual victimization, emphasizing the importance of mental health in the revictimization process. This leads to my second hypothesis.

Hypothesis 2: Psychological distress will increase the risk of experiencing offline victimization among those who have experienced cyberstalking.

Figure 2 – Psychological Distress increases likelihood of Offline Victimization



Psychological distress as a mediator of the relationship between gender and cyberstalking

It is also necessary to take gender dynamics into account when considering how cyberstalking may influence subsequent offline victimization. Gender is not only a predictor of who is likely to experience cyberstalking (Dreßing et al. 2014), but gender also predicts who experiences the most psychological distress in response to cyberstalking (Englebrecht and Reyns 2011). A gendered approach is then necessary on two fronts. First, men and women are socialized into different coping styles. These different coping styles affect behaviors that men and women adopt in response to their victimization (Crawford et al. 2001; Efthim, Kenny, and Mahalik 2001; Gauthier-Duchesne et al. 2024; Genuchi 2015; Gjerde, Block, and Block 1988), as well as how they conceptualize their victimization. Men are socialized to externalize their distress in a way that can present as aggressive and criminogenic behavior, while women are socialized to internalize their distress in ways that are less aggressive and criminogenic (Joon Jang 2007; Liu and Miller 2020; Schwartz and Darrell 2017). It would then follow that men may engage in outwardly destructive behavior that expose them to more opportunities for victimization from counterretaliation, while women would present with more signals of vulnerability that would make them susceptible to victimization from their internalized psychological distress (Jacobs and Wright 2006).

The increased likelihood of women internalizing their victimization may lead to heightened expressions of anxiety and depression, which may make them appear to be more suitable victims (Clay-Warner, Bunch, McMahon-Howard 2016). The increased presence of visible psychological distress may signal to a motivated offender that they are a suitable victim, and in the absence of a capable guardian would then allow for crime to occur, according to routine activity theory (Cohen and Felson 1979). This may hold true for women who engage in

externalized deviant behavior as well, as they are more likely than men to experience psychological distress from engaging in deviant behaviors and thus may still present those signals of vulnerability (Broidy and Agnew 1997; Rosenfield, Phillips, and White 2006).

Secondly, patriarchal policing of women's gender expression may cause additional distress, which may make one a more vulnerable target. As cyberstalking is largely considered to be something done by men to women, the psychological impacts of it are most often experienced by women who recognize the threat as legitimate in comparison to men, who may not take the risk seriously (Englebrecht and Reyns 2011). This can be explained through socialized understandings of victimhood, with some experiences of cyberstalking being acknowledged more readily than others based on how well they fit into understood stereotypes of victimization. Cyber aggression also tends to occur to women for different reasons than it does to men. Women often experience cyber aggression as an attack on their identity as a woman, with this motivation finding its roots in patriarchal assaults on femininity through misogyny (Gentry 2022) and reinforcing gender expectations (Jones, Trott, and Wright 2020).

Policing gender offline reveals the sometimes-violent responses that can occur when one is deviating from social scripts (Mittleman 2023). Applying this idea to the online space draws a connection to how those same efforts to police gender performance may lead to cyber aggressive behaviors disproportionately impacting those who are perceived to be "straying" from their gender. For example, women who identify as such online, especially as supporting feminism and the advancement of rights of women, are frequently exposed to attacks from men to silence or shame them to exercise patriarchal control (Ging 2019). When experiencing harassment based on policing gender norms, individuals reported persistent psychological distress (Lewis, Rowe, and Wiper 2017), which may signal to would-be offenders that they are more suitable targets.

The way online harassment is directed towards a victim affects how psychologically distressing it may be. Fladmoe and Nadim (2019) measured the severity of harassment and whether it was directed at respondent beliefs or identity to classify how victimization was experienced. Men were more likely to experience harassment online in total, yet this harassment was typically associated with their espoused personal and/or political beliefs. In contrast, women were disproportionately more likely to experience negative online interactions based on elements of their identity, chiefly their gender, supporting previously mentioned research on the utilization of cyberstalking as a means of control.

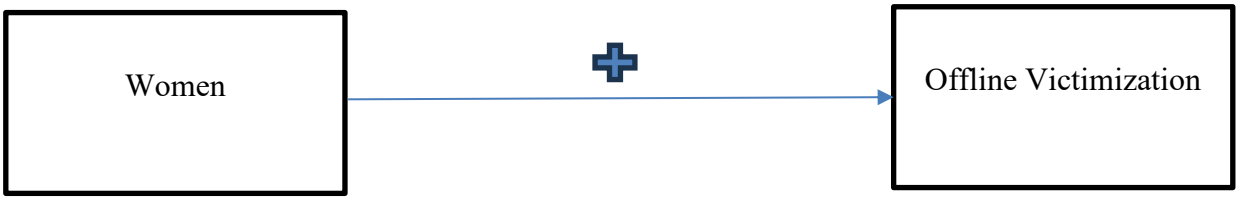
Fear of victimization adds an additional avenue for psychological distress amongst victims. In conjunction with gendered attacks, women's greater underlying fear of victimization plays a significant role in increased psychological distress incurred from cyberstalking. Ferraro (1996) introduced the shadow of sexual assault hypothesis, explaining that women experience a heightened fear of all violent and (to a lesser extent) property crimes due to an underlying fear of sexual assault. This suggests that experiencing cyberstalking may increase the likelihood that women will experience subsequent offline victimization because it taps into a fear of subsequent violent victimization. I argue that this heightened fear increases the psychological distress associated with cyberstalking, which leads to signals of vulnerability.

The broader research on cyberaggression, which encompasses cyber-stalking but also includes other forms of online harassment, further suggests that gender may affect the way that people experience cybervictimization. For example, studies focused on social media, and Twitter in particular, found that the negative sentiment of a tweet can be amplified by using gendered insults and insults based on appearance to reinforce traditional roles of femininity in online spaces (Felmlee 2019). Gendered insults may function as an additional means of exerting

patriarchal control over women and their gender expression by what the aggressor determines is or is not acceptable behavior. In the case of cyberstalking, what is considered harassment is largely guided by heteronormative scripts of acceptable romantic engagement, which may lead both perpetrators and outside parties to view the incident as an acceptable interaction rather than a violation of the autonomy of the woman involved (Becker, Ford, and Valshtein 2020). Becker and colleagues (2020) additionally found that harassment from offenders previously in a romantic relationship with the victim were more likely to be seen as acceptable. In that way, cyberstalking and stalking are both guided heavily by gender scripts that make it normatively acceptable, particularly for those who have been in romantic relationships with their offender (Cavezza and McEwan 2014).

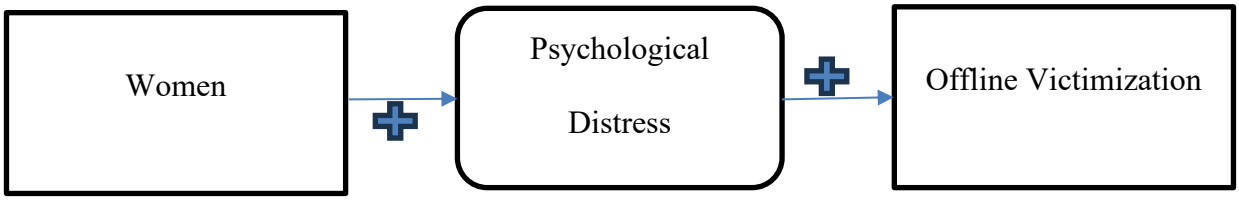
Hypothesis 3a: Among victims of cyberstalking, women will have a higher likelihood of subsequent offline victimization than will men.

Figure 3 – Gendered differences in offline victimization risk



Hypothesis 3b: Among victims of cyberstalking, psychological distress will mediate the effect of gender on subsequent offline victimization, such that women will experience higher levels of offline victimization than men due to higher levels of psychological distress.

Figure 4 – Psychological Distress as a mediator of the effects of gender on offline victimization



CHAPTER 4

DATA AND METHODS

Data Description

To answer my research questions, I use data from the National Crime Victimization Survey (NCVS) 2018, 2019, and 2020 household and person-level files and the 2019 NCVS Supplemental Victimization Survey (SVS). The NCVS is a large-scale and ongoing survey of a nationally representative sample of residential addresses fielded since 1972 and administered by the U.S. Census Bureau about experiences of victimization for individuals and households. The survey is administered every 6 months to the same households for 3 years, among residents who are at least 12 years old. Households are defined by the physical location of the home, not by the occupants of the residence. As such, residences remain in the survey for a period of three years, even when the original respondents have moved.

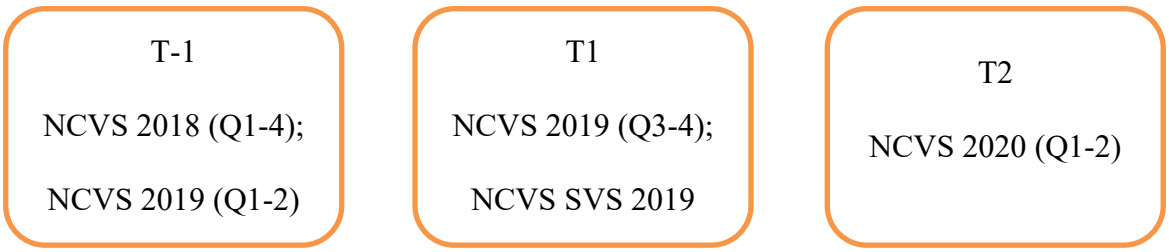
In 2019, NCVS participants over the age of 16 were administered a supplemental survey about their online victimization experiences via the SVS. The SVS asks respondents about their experiences with stalking, with some questions geared towards cyberstalking experiences and respondent reactions to those events. Unlike the main NCVS, the SVS does not allow for proxy interviews. When restricting the data to those with responses to the SVS, the N drops from 141,300 to 105,000 eligible responses.

Utilizing the NCVS and the SVS offers a nationally representative sample of respondents who have data on both offline and online victimization experiences. It is preferable to other crime statistics reports because, in combination, the NCVS and SVS provide longitudinal data on

offline victimization experiences as well as supplemental data on cybervictimization experiences over a six-month period. Longitudinal data is necessary to test the causal relationship between online and offline victimization. Additionally, the administration waves allow me to capture the effects of victimization closest to the inciting incident.

The specific years of the NCVS and SVS were chosen for a few notable reasons. First, the most recent iteration of the SVS was 2019, offering the most up-to-date information. This time frame additionally largely excludes data that would have been collected during COVID-19, which was a unique event that increased many people's online activity. The 2018, 2019, and 2020 NCVS datasets were concatenated to create a longitudinal dataset that included victimization experiences before and after the focal year of 2019.

Figure 5 – How periods are organized in time series



After constructing the concatenated longitudinal dataset, the initial N of 105,000 is reduced to 95,700, reflecting how many participants had responses in all NCVS periods (as well as the SVS). Once filtering for respondents who were present in all time points of the survey and who answered questions for the dependent and focal independent variable, the N was 36,906. The descriptive statistics utilizing this final N can be found in Table 1. Figure 5 shows how data were organized to test longitudinal processes. T-1 includes NCVS response data from all quarters in 2018 and the first two in 2019. T1 includes NCVS and SVS data from the last two quarters of 2019. T2 includes data from the first two quarters of 2020.

Dependent variables

There are two dependent variables: violent victimization and property victimization. Violent victimization includes attempted/completed/threatened aggravated assault, rape, or sexual assault; completed simple assault with injury; and attempted/completed robbery. Property crime includes completed/attempted theft, burglary, larceny, motor vehicle theft, and vandalism. These were included as suitable items for measuring property/violent victimization utilizing the NCVS in line with prior studies (Clay-Warner, Bunch, and McMahon-Howard 2016; Lauritsen 2001). Participant reports of criminal victimization were coded into separate dichotomous checklists, where experiencing any form of property/violent crime is coded as 1 and experiencing no form of property/violent crime is coded as 0. These variables were drawn from the first and second quarters of the NCVS 2020 administration.

Focal Independent Variable: Cybervictimization

Cybervictimization was measured using three SVS questions regarding cyberstalking experiences. In the SVS, questions asked if the respondent experienced harassing behaviors in the following ways: "has anyone posted or threatened to post inappropriate, unwanted, or personal information about you on the internet," "has anyone sent unwanted e-mails or messages using the internet," or "has anyone monitored your activities using social media apps like Instagram, Twitter, or Facebook" [for full description of questions, see Appendix B]. These items were collected at T1 (see figure 5) and coded into a dichotomous checklist. A participant was coded 1 for cybervictimization if they reported any of these experiences.

Psychological distress

The variable for psychological distress was collected from the SVS and was constructed from a 15-item checklist that asks the respondent about their reactions to their cybervictimization

(e.g., did the respondent feel unsafe or fearful in response) (for full list, see Appendix B). Only participants who reported cybervictimization were given the psychological distress inventory, as the inventory asks exclusively about distress in response to the victimization event. The Cronbach's alpha was 0.867, indicating strong scale reliability. All items in the psychological distress checklist are coded dichotomously, with 1 indicating they felt distressed and 0 indicating they did not. I created an additive checklist from these items.

Gender

Gender was measured dichotomously using respondent sex because of limited data on respondents identifying as neither male nor female. Women were coded as "1" and male as "0."

Control variables

The propensity score matching procedure controls for factors that make a person more or less likely to experience a cybervictimization event at the focal time period. There is limited research on cybervictimization risk, so I control on factors known to increase risk of criminal victimization, in general. On the individual level, I controlled for previous property and violent crime victimization as they have been found to be significant predictors of later victimization (Gottfredson 1984). I additionally controlled for marital status and educational attainment as proxies for social bonds (Gottfredson, 1984), as marriage and having completed some college are protective factors against victimization (Hindelang 1978). I controlled for age as it is a significant predictor of victimization(Farrington, 1986). I controlled for income as it has been supported as a significant variable in population heterogeneity research (Wagle 2014).I additionally control for race and ethnicity (coded as Black and Hispanic respectively) as these variables are significant predictors of victimization risk compared to dominant racial/ethnic groups.

Prior research has additionally found several household level variables to be significantly associated with victimization risk (Catalano 2006; Rennison 2000; Truman 2011). Victimization has been found to increase with household size, as well as to be more common in female-headed households and amongst those who do not own their home. I control for urbanicity as home location is significant in predicting victimization. Additionally, He and colleagues (2024) found that resident perception of safety was higher in gated communities than in ungated communities. Residence in a gated community may then be important when testing hypothesis 3, as location alters perception of victimization risk.

Prior property/violent victimization are both coded as 1 if a respondent indicated experiencing victimization in T-1, and 0 if they had not. Married was coded 1 for those currently married or cohabitating, and 0 for those not. Some College was coded 1 for those who reported their highest attained education was "some college" or higher, and 0 if they reported their highest level of education was below "some college." Black was coded 0 if the respondent is white and 1 if the respondent is Black. Hispanic was coded 1 if the respondent was Hispanic and 0 otherwise. Residence in a gated community, homeowner status, female-headed household, and urbanicity were all coded as 1 if the respondent indicated they live in a gated community, own their current home, the head of the household is female, or the household is in an urban area, respectively. Income is a categorical variable as reported in the NCVS [see Appendix B], but was used here as a continuous variable, in line with past research using the NCVS (e.g., Lauritsen 2001). Age and number of household members were continuous variables that indicate the respondent's age and how many individuals live in the home of the respondent, respectively.

Analytic Strategy

To properly address population heterogeneity, I utilized propensity score matching to test hypothesis 1. According to the population heterogeneity perspective, underlying stable factors affect an individual's likelihood of victimization. To isolate the effect of a particular victimization event on risk of future victimization, I have matched respondents on their propensity for victimization. Matching allows for confounding covariate effects to be minimized, as people are compared to those with similar levels of risk. The matching variables include educational attainment, marital status, age, race, ethnicity, income, housing, urbanicity, residence in a gated community, the number of people living in the household, whether it was a female headed household, and property and violent victimization, as described above. Propensity score matching utilizes panel data over a minimum of two time periods. This style of analysis has been used in prior research to account for differences between victimized and non-victimized respondents by matching the treated with the untreated (in this instance, those who experienced cybervictimization with those who had not) across similar demographic variables to isolate for the effect of the treatment (e.g., Clay-Warner et al. 2016).

In implementing the PSM, I used Epanechnikov kernel matching with a bandwidth of .01. Kernel matching uses untreated groups with similar propensity scores to a treated case to create a counterfactual. The Epanechnikov specification allows for treated cases to be matched with those untreated cases most like their scores without sacrificing high volume on treated cases, managing smoothness of match without introducing undue bias (Cid and von Davier 2015). As propensity scores match treated and untreated cases based on their underlying propensity for experiencing victimization, models utilizing propensity scores do not include control variables (Table 3).

Additionally, I ran an analysis utilizing inverse probability of treatment weighting (IPTW) as a comparison model. IPTW addresses the over-controlling issue common with conventional regression models involving time-varying covariates and provides more accurate treatment effects as a result (Wodtke, Harding, and Elwert 2011; Robins 1999; Robins et al. 2009). As this analysis utilizes three different time points, it is essential that the regression means capture the effect of time-varying covariates as well as time-invariant covariates to minimize unexplained effects of unobserved covariates. Standard propensity score matching does not properly weight for this and often provides more conservative estimates via over-controlling indirect effects. As such, I examine the effects of cyberstalking on offline victimization using both propensity score matched data and IPTW logistic models. Because IPTW weights scores based on available covariates, models using it (Table 4) also do not include control variables.

In lieu of a traditional regression model, I utilize a Firth estimator regression model for the matched data. This model type is used for data with rare occurrences (Firth 1993), such as victimization (e.g., Clay-Warner et al. 2016; Bunch, Clay-Warner, and McMahon-Howard 2014; (Gim and Ko 2017). I use only firth regression models to test hypotheses 2, 3a, and 3b, as these hypotheses involve only the subsample that has experienced cybervictimization. The tests for Hypotheses 2 and 3a included all matching variables as control variables in the firth regression. The test of Hypothesis 3b first models the relationship between gender and property/violent victimization, then introduces psychological distress, and finally introduces all variables previously used for matching as controls.

CHAPTER 5

RESULTS

The first step in analyzing data using propensity score matching is to assess whether the matching procedure produced balanced data. Table 2 displays the tests for covariate imbalance before and after matching. The matching table is used to show that significant differences exist between respondents who experienced cybervictimization and respondents who did not. After matching, no variables should be significantly different. Previous property crime victimization, previous violent crime victimization, race, ethnicity, educational attainment, marriage, age, number of household members, residence in a gated community, homeownership, and living in a female headed household were all statistically significant before matching. Income and urbanicity were not significant ($p > .05$). As such, there was a significant difference between the two groups for most variables, with sufficient variation when cases are unmatched that the effects of cybervictimization cannot be ascertained via standard regression. After matching, violent crime victimization and age in (T-1) were the only variables that remained significant. This would suggest that matching could not completely account for the influence these variables had on subsequent offline victimization, which reemphasizes the importance of using inverse probability weighting for additional robustness. The reduction in bias was consistent amongst all variables after matching, however. As such, conducting propensity score matching was suitable for the data structure and controls for population heterogeneity. For cybervictimization in H1, the N treated cases is 582, and untreated cases 36,324.

Hypothesis 1

To test hypothesis 1, which predicted that cybervictimization would increase risk of offline victimization, I examined the effects of cybervictimization on property victimization and violent victimization after adjusting for underlying victimization propensity using PSM (shown in Table 3). The PSM model coefficient for property victimization was .0308 and .0174 for violent crime victimization. This means that there is a 3.08% and 1.74% increase in the likelihood a respondent will experience property or violent crime victimization, respectively, after experiencing cybervictimization in the previous time point, controlling for underlying propensity to experience property or violent victimization. Both relationships are statistically significant ($p<.01$).

For property crime victimization, I ran an IPTW analysis with robustness checks (shown in Table 4). The coefficient average treatment effect was .0246 and significant at the 95% confidence level ($p =.005$), indicating that experiencing cybervictimization in T1 led to a 2.46% increase in the likelihood of experiencing property crime victimization in T2. Next, I ran a Firth logistic regression (Table 5) to calculate odds of victimization among those who experienced cybervictimization compared to those who did not. This analysis indicated that experiencing cybervictimization led to 2.625 times higher odds of experiencing property crime victimization ($p < .01$).

For violent victimization, I ran an IPTW analysis with robustness checks (shown in Table 4). The coefficient average treatment effect was .0109 and significant ($p < .05$), indicating that experiencing cybervictimization in T1 led to a 1.09% increase in the likelihood of experiencing violent crime victimization in T2. Running a firth regression (shown in Table 5) resulted in a coefficient of 3.959, indicating a 3.959 times increase in the odds of a respondent experiencing

violent crime in T2 after experiencing cybervictimization in T1 ($p<.01$). These results corroborate the findings from the PSM for both violent and property victimization.

Hypothesis 2

To test the effect of psychological distress on likelihood of offline victimization (H2), I conducted a subsample analysis amongst those who reported experiencing cybervictimization. Firth estimates showed that psychological distress associated with cybervictimization did not significantly predict property crime or violent crime (Table 6). Firth estimates were similarly not significant when including additional controls (Table 6). Thus, psychological distress did not predict increased odds of either property or violent crime victimization. Hypothesis two was not supported.

Hypothesis 3a

I found partial support for hypothesis 3a. Hypothesis 3a predicted that, amongst the subsample of cyberstalking victims, gender would significantly predict offline victimization risk. Firth estimation models (Table 7) showed a marginally significant relationship between gender and property crime victimization ($p<.1$), such that women cyberstalking victims had a 2.27 times increase in the odds of experiencing property crime victimization in T2. There was no significant relationship between gender and violent crime victimization, however.

Hypothesis 3b

I did not find support for hypothesis 3b. Hypothesis 3b predicted that psychological distress would mediate the effect of gender on offline victimization amongst those who experienced cyberstalking. Firth estimation models (Table 8) showed a marginally significant relationship between gender and T2 property crime victimization ($p < .1$), such that women who experienced cybervictimization in T1 have a 2.27 times increase in the odds of experiencing

property crime victimization in T2. Gender was still marginally significant when including psychological distress in the firth model ($p < .1$). Thus, psychological distress did not mediate the effects of gender on property victimization among victims of cyberstalking.

CHAPTER 6

DISCUSSION

The results of this study show that there is a relationship between online victimization and offline victimization. In testing hypothesis 1, I find support for positive state dependence theory. Experiencing cybervictimization increased the likelihood of experiencing subsequent violent and property victimization. There was no support, though, for the argument that psychological distress would increase the likelihood of experiencing offline victimization (hypothesis 2) among those who experienced cybervictimization. There was limited support for hypothesis 3a, as gender had only a marginally significant effect in predicting later property crime victimization. There was no support for the prediction that the effect of gender on offline victimization is mediated by psychological distress (hypothesis 3b).

In this study, cybervictimization was found to significantly increase the likelihood of experiencing property and violent crime victimization at a later time point, but the effects on violent victimization seem particularly strong. I speculate that cybervictimization may have a particularly powerful effect on violent victimization because of cyberIPV. This phenomenon describes violent intimate partners as using online tools to better control and abuse their partners. If this is the case, it would be in line with previously mentioned research describing how online victimization allows offenders to gather information on a victim (Johnson et al, 2019). An intimate partner would be able to use online tools to monitor far more of their partner's activities, making them easier to control. Stranger victimization may also contribute to increased risk of violent victimization through signals of vulnerability. In addition, cybervictims may be

susceptible to stranger violence because their victimization changes how they perceive threat. This explanation would be in line with Ward and colleagues' (2017) finding that victims had greater difficulty identifying potential offenders than did their non-victimized peers.

Hypothesis 2 and 3b were not supported. Psychological distress does not affect the likelihood of offline victimization among victims of cyberstalking. It also does not explain the relationship between gender and offline victimization amongst those who experienced cyberstalking. Gender was a marginally significant predictor of property victimization, though this relationship disappeared once control variables were included. Failure to find effects for gender may be because this study did not isolate the effects of identity-based harassment. Fladmoe and Nadim (2019) found that men experience cybervictimization more often based on their views than their identity, while women experience more identity-based victimization. Future research should examine how experiencing cyberstalking related to gender identity affects future victimization risk.

Strengths and limitations

Utilizing propensity score matching allows for the measurement of the state dependence effect while also controlling for spurious association that would support population heterogeneity. In doing so, this study tests the positive state dependence theory by controlling for predisposing characteristics. Incorporating inverse probability of treatment weighting allowed me to reduce bias over multiple time points, as well as partially control for unmeasured covariates that may impact these results. In utilizing a nationally representative sample, the results can be generalized to the US population without significant impact from regional differences, though data loss due to nonresponse affects the generalizability of findings.

This project is not without its limitations. In conceptualizing cybervictimization as cyberstalking, there are notable cyber aggressive acts that are outside the scope of this study due to the structure of the NCVS. Follow-up studies should incorporate a more robust analysis of additional cyber aggressive behaviors like phishing or doxing to see if they similarly increase risk of offline victimization. Different types of cybervictimization were additionally compiled into a checklist, though the effects of different styles of cybervictimization may differ.

There are notable data limitations in this study. Due to the lack of data on non-victim psychological distress it was not possible to test the mediating effect of psychological distress on the relationship between cybervictimization and offline victimization. This limitation constrained my analysis to a subgroup of cybervictims, meaning that the effect of psychological distress on offline crime only applies to cybervictims. Further, NVCS data are nationally representative, but that generalizability is greatly reduced due to listwise deletion of missing data. The three-year panel design additionally limited the data available for analysis, as not all respondents in a cycle were present before and after taking the supplemental survey. The study additionally has elements of the 2020 COVID-19 pandemic, as the second quarter of the NCVS 2020 survey would incorporate March to June, which may influence results.

Future Research

Future research should investigate the relationship between cybervictimization and offline crime with a dataset that has more abundant measures of cybervictimization. The SVS is limited in the range of online behaviors it captures, making it impossible to capture the effects of different types of cybervictimization (such as scamming, phishing) as well as the depth of these interactions. These data could investigate a potential threshold effect that determines when experiencing cybervictimization become significant in predicting offline victimization.

Additionally, having data on the mental health of participants unrelated to their experiences of cybervictimization would make it possible to examine the role of psychological distress in shaping victimization risk. Future studies should incorporate more questions on the psychological state of both those affected by cybervictimization as well as those who were not to better isolate the effect of psychological distress in the continuity of victimization over time.

Material cybercrimes should be considered as well, such as doxing, which involves a transfer of online to offline victimization that could leave lasting psychological distress. Phishing should also be considered, since phishing directly increases target suitability. Regarding these crimes, the role of data brokering needs additional research. The selling of information may make someone more accessible for potential phishing attempts, but assessing the causal relationship requires more research.

Conclusion

This project sought to test the applicability of state dependence theory to explain the relationship between online and offline victimization. My results show that there is a causal relationship between cybervictimization and both property and violent crime victimization. This is an important step in understanding how online routines impacts offline routines, and future research should investigate this relationship further to explain the mechanisms behind this relationship.

In addition to testing theory, the central idea behind the project was to bring attention to the potential long-term harm that could be incurred by those experiencing online victimization, particularly as it becomes a more common aspect of social life. The 2020 pandemic saw an increase in violent hate crimes worldwide (Gray and Hansen 2021; Lantz and Wenger 2023;

Piatkowska and Whittington 2024), which was additionally a point of concern and motivation for testing the effect of cybervictimization on offline crime.

Hopefully, this work can contribute to the development of policy around properly monitoring the online space for cyber aggressive behaviors, including cyberstalking, as well as push law enforcement to legitimately consider it as a criminal offense.

REFERENCES

Abrams, Karen M., and Gail Erlick Robinson. 2002. "Occupational Effects of Stalking." *The Canadian Journal of Psychiatry* 47(5):468–72. doi:10.1177/070674370204700508.

Book, Angela, Kimberly Costello, and Joseph A. Camilleri. 2013. "Psychopathy and Victim Selection: The Use of Gait as a Cue to Vulnerability." *Journal of Interpersonal Violence* 28(11):2368–83. doi:10.1177/0886260512475315.

Broidy, Lisa, and Robert Agnew. 1997. "Gender and Crime: A General Strain Theory Perspective." *Journal of Research in Crime and Delinquency* 34:275–306.

Cid, Jaime A., and Alina A. von Davier. 2015. "Examining Potential Boundary Bias Effects in Kernel Smoothing on Equating: An Introduction for the Adaptive and Epanechnikov Kernels." *Applied Psychological Measurement* 39(3):208–22. doi:10.1177/0146621614555901.

Clay-Warner, Jody, Jackson Bunch, and Jennifer McMahon-Howard. 2016."Differential Vulnerability: Disentangling the Effects of State Dependence and Population Heterogeneity on Repeat Victimization - Jody Clay-Warner, Jackson M. Bunch, Jennifer McMahon-Howard, 2016." https://journals.sagepub.com/doi/full/10.1177/0093854816636415?casa_token=Vs9baDg5OT4AAAAA%3AOjR8E515zu3T2NP1u1TvaOqn834t4FPwklMnIsxPr4osi4n3leLstp5gCmCPEb68C7XXgF2yCPk.

Cougle, Jesse R., Heidi Resnick, and Dean G. Kilpatrick. 2009. "A Prospective Examination of PTSD Symptoms as Risk Factors for Subsequent Exposure to Potentially Traumatic Events among Women." *Journal of Abnormal Psychology* 118(2):405–11. doi:10.1037/a0015370.

Crawford, Thomas N., Patricia Cohen, Elizabeth Midlarsky, and Judith S. Brook. 2001. "Internalizing Symptoms in Adolescents: Gender Differences in Vulnerability to Parental Distress and Discord." *Journal of Research on Adolescence* 11(1):95–118. doi:10.1111/1532-7795.00005.

D., Johnson S., Summers L., and Pease K. 2009. "Offender as Forager? A Direct Test of the Boost Account of Victimization." *Journal of Quantitative Criminology* 25:181–200.

Dardis, Christina M., Timothy Amoroso, and Katherine M. Iverson. 2017. "Intimate Partner Stalking: Contributions to PTSD Symptomatology among a National Sample of Women Veterans." *Psychological Trauma: Theory, Research, Practice, and Policy* 9(Suppl 1):67–73. doi:10.1037/tra0000171.

Diette, Timothy M., Arthur H. Goldsmith, Darrick Hamilton, William Darity Jr., and Katherine McFarland. 2014. "Stalking: Does It Leave a Psychological Footprint?" *Social Science Quarterly* 95(2):563–80. doi:10.1111/ssqu.12058.

Dreßing, Harald, Josef Bailer, Anne Anders, Henriette Wagner, and Christine Gallas. 2014. "Cyberstalking in a Large Sample of Social Network Users: Prevalence, Characteristics, and Impact Upon Victims." *Cyberpsychology, Behavior, and Social Networking* 17(2):61–67. doi:10.1089/cyber.2012.0231.

Efthim, Paul W., Maureen E. Kenny, and James R. Mahalik. 2001. “Gender Role Stress in Relation to Shame, Guilt, and Externalization.” *Journal of Counseling & Development* 79(4):430–38. doi:10.1002/j.1556-6676.2001.tb01990.x.

Felson, Marcus, and Lawrence E. Cohen. 1980. “Human Ecology and Crime: A Routine Activity Approach.” *Human Ecology* 8(4):389–406. doi:10.1007/BF01561001.

Firth, David. 1993. “Bias Reduction of Maximum Likelihood Estimates.” *Biometrika* 80(1):27–38. doi:10.1093/biomet/80.1.27.

Gauthier-Duchesne, Amélie, Mylène Fernet, Martine Hébert, Roxanne Guyon, Monique Tardif, and Natacha Godbout. 2024. “The Externalization of Suffering among Male Survivors of Child Sexual Abuse: ‘A Deeply Buried Rage That Must Come Out.’” *Psychology of Men & Masculinities* 25(2):142–51. doi:10.1037/men0000453.

Genuchi, Matthew. 2015. “Anger and Hostility as Primary Externalizing Features of Depression in College Men.” *International Journal of Men’s Health*.

Gim, Tae-Hyoung Tommy, and Joonho Ko. 2017. “Maximum Likelihood and Firth Logistic Regression of the Pedestrian Route Choice.” *International Regional Science Review* 40(6):616–37. doi:10.1177/0160017615626214.

Gjerde, Per F., Jack Block, and Jeanne H. Block. 1988. “Depressive Symptoms and Personality during Late Adolescence: Gender Differences in the Externalization-Internalization of Symptom Expression.” *Journal of Abnormal Psychology* 97(4):475–86. doi:10.1037/0021-843X.97.4.475.

Grayson, Betty, and Morris I. Stein. 1981. “Attracting Assault: Victims’Nonverbal Cues.” *Journal of Communication* 31(1):68–75. doi:10.1111/j.1460-2466.1981.tb01206.x.

Gunns, Rebekah E., Lucy Johnston, and Stephen M. Hudson. 2002. “Victim Selection and Kinematics: A Point-Light Investigation of Vulnerability to Attack.” *Journal of Nonverbal Behavior* 26(3):129–58. doi:10.1023/A:1020744915533.

Hindelang, M. J., M. R. Gottfredson, and J. Garofalo. 1978. “Victims of Personal Crime: An Empirical Foundation for a Theory of Personal Victimization.”

Holt, Thomas J., and Adam M. Bossler. 2008. “Examining the Applicability of Lifestyle-Routine Activities Theory for Cybercrime Victimization.” *Deviant Behavior* 30(1):1–25. doi:10.1080/01639620701876577.

Jansen van Rensburg, Shandré Kim. 2017. “Unwanted Attention: The Psychological Impact of Cyberstalking on Its Survivors.” *Journal of Psychology in Africa* 27(3):273–76. doi:10.1080/14330237.2017.1321858.

Jean, Peter K. B. St. 2008. *Pockets of Crime: Broken Windows, Collective Efficacy, and the Criminal Point of View*. University of Chicago Press.

Joon Jang, Sung. 2007. “Gender Differences in Strain, Negative Emotions, and Coping Behaviors: A General Strain Theory Approach.” *Justice Quarterly* 24(3):523–53. doi:10.1080/07418820701485486.

Jordan, Carol E., Tk Logan, Robert Walker, and Amy Nigoff. 2003. "Stalking: An Examination of the Criminal Justice Response." *Journal of Interpersonal Violence* 18(2):148–65. doi:10.1177/0886260502238732.

Lauritsen, Janet L. 2001. "The Social Ecology of Violent Victimization: Individual and Contextual Effects in the NCVS." *Journal of Quantitative Criminology* 17(1):3–32. doi:10.1023/A:1007574114380.

Lewis, Ruth, Michael Rowe, and Clare Wiper. 2017. "Online Abuse of Feminists as An Emerging Form of Violence Against Women and Girls." *The British Journal of Criminology* 57(6):1462–81. doi:10.1093/bjc/azw073.

Liu, Lin, and Susan L. Miller. 2020. "Protective Factors against Juvenile Delinquency."

Maxfield, Michael G. 1987. "Lifestyle and Routine Activity Theories of Crime: Empirical Studies of Victimization, Delinquency, and Offender Decision-Making." *Journal of Quantitative Criminology* 3(4):275–82.

McCart, Michael R., Kristyn Zajac, Michael J. Kofler, Daniel W. Smith, Benjamin E. Saunders, and Dean G. Kilpatrick. 2012. "Longitudinal Examination of PTSD Symptoms and Problematic Alcohol Use as Risk Factors for Adolescent Victimization." *Journal of Clinical Child & Adolescent Psychology* 41(6):822–36. doi:10.1080/15374416.2012.717872.

McKeon, Bronwyn, Troy E. McEwan, and Stefan Luebbers. 2015. "'It's Not Really Stalking If You Know the Person': Measuring Community Attitudes That Normalize, Justify and Minimise Stalking." *Psychiatry, Psychology and Law* 22(2):291–306. doi:10.1080/13218719.2014.945637.

Olaghere, Ajima, and Cynthia Lum. 2018. "Classifying 'Micro' Routine Activities of Street-Level Drug Transactions." *Journal of Research in Crime and Delinquency* 55(4):466–92. doi:10.1177/0022427818760103.

Ousey, Graham C., Pamela Wilcox, and Sara Brummel. 2008. "Déjà vu All Over Again: Investigating Temporal Continuity of Adolescent Victimization." *Journal of Quantitative Criminology* 24(3):307–35. doi:10.1007/s10940-008-9046-6.

Pathé, Michele, and Paul E. Mullen. 1997. "The Impact of Stalkers on Their Victims." *The British Journal of Psychiatry* 170(1):12–17. doi:10.1192/bjp.170.1.12.

Pease, K. 1998. *Repeat Victimisation: Taking Stock*. Vol. 90. Home Office Police Research Group.

Pratt, Travis C., and Jillian J. Turanovic. 2016. "Lifestyle and Routine Activity Theories Revisited: The Importance of 'Risk' to the Study of Victimization." *Victims & Offenders* 11(3):335–54. doi:10.1080/15564886.2015.1057351.

Rosenbaum, Paul R., and Donald B. Rubin. 1983. "The Central Role of the Propensity Score in Observational Studies for Causal Effects." *Biometrika* 70(1):41–55.

Rosenfield, Sarah, Julie Phillips, and Helene White. 2006. "Gender, Race, and the Self in Mental Health and Crime." *Social Problems* 53(2):161–85. doi:10.1525/sp.2006.53.2.161.

Schwartz, Jennifer, and Steffensmeier Darrell. 2017. “Gendered Opportunities and Risk Preferencesfor Offending Across the Life Course.” *Journal of Developmental and Life-Course Criminology* 3(2):126–50. doi:10.1007/s40865-016-0050-5.

Scott, Adrian J., and Lorraine Sheridan. 2011. “‘Reasonable’ Perceptions of Stalking: The Influence of Conduct Severity and the Perpetrator–Target Relationship.” *Psychology, Crime & Law* 17(4):331–43. doi:10.1080/10683160903203961.

Short, Emma, Andrew Guppy, Jacqui A. Hart, and James Barnes. 2015. “The Impact of Cyberstalking.” *Studies in Media and Communication* 3(2):23–37. doi:10.11114/smc.v3i2.970.

Ward, Robert, Shubha Sreenivas, Judi Read, Kate E. A. Saunders, and Robert D. Rogers. 2017. “The Role of Serotonin in Personality Inference: Tryptophan Depletion Impairs the Identification of Neuroticism in the Face.” *Psychopharmacology* 234(14):2139–47. doi:10.1007/s00213-017-4619-4.

Westrup, D., WJ Fremouw, RN Thompson, and SF Lewis. 1999. “The Psychological Impact of Stalking on Female Undergraduates.” *Journal of Forensic Sciences* 44(3):554–57. doi:10.1520/JFS14507J.

Winkel, Frans Willem, and Robert J. McCormack. 1997. “Victim Precipitation: Some Fresh Evidence on Nonverbally Mediated Perceptions of Vulnerability.” *Psychology, Crime & Law* 3(3):219–25. doi:10.1080/10683169708410816.

Wodtke, Geoffrey T., David J. Harding, and Felix Elwert. 2011. “Neighborhood Effects in Temporal Perspective: The Impact of Long-Term Exposure to Concentrated Disadvantage on High School Graduation.” *American Sociological Review* 76(5):713–36. doi:10.1177/0003122411420816.

APPENDICES

APPENDIX A: TABLES

Table 1 - Descriptive Statistics (N: 36,906)

Variable	Mean	Std. Dev.	Min	Max
Cybervictimization	.016	.125	0.000	1.000
Property Crime (T1)	.035	.183	0.000	1.000
Property Crime (T2)	.016	.124	0.000	1.000
Violent Crime (T1)	.012	.110	0.000	1.000
Violent Crime (T2)	.005	.071	0.000	1.000
Black	.091	.288	0.000	1.000
Hispanic	.106	.308	0.000	1.000
Female	.465	.499	0.000	1.000
Income	12.749	3.889	1.000	18.000
Some College	.469	.499	0.000	1.000
Married	.592	.491	0.000	1.000
Gated	.921	.269	0.000	1.000
Homeowner	.216	.412	0.000	1.000
Urban	.239	.426	0.000	1.000
Household Size	2.482	1.339	1.000	13.000
Female-headed household	.779	.421	0.000	1.000
Property Crime (T2)	.016	.124	0.000	1.000
Violent Crime (T2)	.005	.071	0.000	1.000

Distress	.003	.055	0.000	1.000

***Psychological Distress is part of the subgroup analysis, with an N of 329**

Table 2 – Comparison of matched and unmatched groups (N: 36,906)

Variable	Unmatched/ Matched	Mean Treated	Mean Control	%bias	%reduction bias	t-test t	t-test p>t	V(T)/ V(C)	
Violent Crime(T-1)	U	0.041	0.012	18.3		6.38	0.000	.	
	M	0.041	0.015	16.0	12.3	2.65	0.008	.	
Property Crime (T-1)	U	0.072	0.034	16.9		4.95	0.000	.	
	M	0.072	0.051	9.2	45.7	1.46	0.145	.	
Black	U	0.056	0.092	-13.7		-2.99	0.003	.	
	M	0.056	0.056	0.0	100.0	0.00	1.000	.	
Hispanic	U	0.061	0.108	-16.7		-3.60	0.000	.	
	M	0.061	0.056	1.8	89.0	0.37	0.710	.	
Female	U	0.402	0.466	-13.3		-3.16	0.002	.	
	M	0.402	0.414	-2.8	79.2	-0.47	0.635	.	
Age	U	50.196	52.795	-15.2		-3.55	0.000		0.90
	M	50.196	52.557	-13.8	9.2	-2.35	0.019		0.88
Some College	U	0.591	0.467	25.0		5.98	0.000	.	
	M	0.591	0.591	0.0	100.0	0.00	1.000	.	
Married	U	0.491	0.594	-20.8		-5.04	0.000	.	
	M	0.491	0.499	-1.7	91.7	-0.29	0.771	.	
Income	U	13.034	12.745	7.4		1.79	0.074		1.03
	M	13.034	13.000	0.9	88.2	0.15	0.883		0.99
Gated	U	0.894	0.922	-9.4		-2.43	0.015	.	
	M	0.894	0.891	1.2	87.5	0.19	0.851	.	
Homeowner	U	0.264	0.217	11.1		2.76	0.006	.	
	M	0.264	0.266	-0.4	96.4	-0.07	0.947	.	
Urban	U	0.221	0.238	-3.9		-0.94	0.349	.	
	M	0.221	0.225	-0.8	79.5	-0.14	0.889	.	
Household Size	U	2.337	2.482	-10.8		-2.60	0.009		1.00
	M	2.337	2.325	0.9	91.8	0.16	0.876		1.12

Female-headed Household	U	0.671	0.771	-22.4		-5.69	0.000	.
	M	0.671	0.673	-0.4	98.3	-0.06	0.950	.

Table 3 - Effect of Cybervictimization on offline victimization with Epanechnikov kernel matching procedures (N:37,362)

Variables	Property Crime	Violent Crime
Cybervictimization	0.0308***	0.0174***
	-0.0052	-0.0029
Constant	0.0152***	0.00476***
	-0.0006	-0.0004
R-squared	0.0010	0.0010

Standard errors in parentheses
*** p<0.01

Table 4 - IPTW logistic regression for the effect of cybervictimization on property and violent crime victimization (N: 36,906)

Cybervictimization	Coefficient	Standard Error	z	P>z	[95% Confidence Interval]	
Property Crime	0.0245736	0.0087424	2.81	0.005	0.0074389	0.041708
Violent Crime	0.01086	0.0046356	2.34	0.019	0.0017744	0.019946

Table 5 – Firth regression for cybervictimization on property and violent crime (N:36,906)

Variables	Property Crime	Violent Crime
Cybervictimization	2.64***	3.96***
	-0.54	-1.16
Constant	7.21e+07***	3.00e+08***
	-1.89	-1.13

Standard errors in parentheses

*** p<0.01

Table 6 – Firth logit estimation for regression of psychological distress and control variables on property and violent crime victimization (N:329)

Variables	Property Crime(T2)	Violent Crime(T2)	Property Crime(T2)	Violent Crime(T2)
Distress	1.781	2.133	1.811	2.457
	-1.651	-1.658	-1.868	-2.014
Violent Crime			0.994	1.256
			-0.761	-0.975
Property Crime			0.645	-0.079
			-0.647	-0.951
Black			-1.384	-0.234
			-1.449	-0.908
Hispanic			0.444	-0.886
			-0.739	-1.459
Female			0.996	0 .005
			-0.611	-0.879
Age			0.014	-0.029
			-0.018	-0.019
Some College			0.081	-0.083
			-0.541	-0.617
Married			-0.306	0.213
			-0.678	-0.944
Income			0.005	-0.060
			-0.067	-0.081
Gated			0.022	-0.561
			-0.923	-0.825
Homeowner			0.093	-0.293
			-0.601	-0.744
Urban			-1.012	-1.963
			-0.879	-1.479
Household Size			0.156	-0.212
			-0.203	-0.263
Female-headed Household			-0.287	-1.145
			-0.751	-0.946
Constant	-2.879***	-3.232***	-3.860**	0.940
	-0.246	-0.288	-1.753	-1.898

Standard errors in parentheses; *** p<0.01, ** p<0.05

Table 7 - Firth logit estimation for the effects of gender on property and violent crime victimization (N:329)

Variables	Property Crime (T2)	Violent Crime (T2)	Property Crime (T2)	Violent Crime (T2)
Female	2.2697*	0.563	1.008*	0.014
	-1.109	-0.402	-0.610	-0.878
Violent Crime			0.998	1.258
			-0.761	-0.976
Property Crime			0.649	-0.078
			-0.647	-0.951
Black			-1.387	-0.235
			-1.450	-0.908
Hispanic			0.450	-0.882
			-0.739	-1.459
Age			0.014	-0.029
			-0.018	-0.019
Some College			0.083	-0.081
			-0.541	-0.617
Married			-0.312	0.208
			-0.679	-0.944
Income			0.006	-0.060
			-0.067	-0.081
Gated			0.014	-0.563
			-0.922	-0.825
Homeowner			0.087	-0.297
			-0.601	-0.744
Urban			-1.010	-1.960
			-0.879	-1.479
Household Size			0.154	-0.215
			-0.203	-0.263
Female-headed household			-0.296	-1.150
			-0.751	-0.947
Constant	-3.163***	-3.058***	-3.857**	0.945
	-0.331	-0.316	-1.754	-1.898

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8 – Firth logit estimation for psychological distress mediating the effects of gender on property and violent crime victimization (N:329)

Variables	Property Crime (T2)	Violent Crime (T2)	Property Crime (T2)	Violent Crime (T2)	Property Crime (T2)	Violent Crime (T2)
Female	2.2697*	0.563	2.2595*	0.561	0.996	1.006
	-1.109	-0.402	-1.104	-0.400	-0.611	-0.884
Distress			7.842	7.063	1.811	11.672
			-13.067	-11.748	-1.868	-23.512
Violent Crime					0.994	3.511
					-0.761	-3.423
Property Crime					0.645	0.924
					-0.647	-0.879
Black					-1.384	0.791
					-1.449	-0.718
Hispanic					0.444	0.412
					-0.739	-0.602
Age					0.014	0.971
					-0.018	-0.019
Some College					0.081	0.921
					-0.541	-0.568
Married					-0.306	0.213
					-0.678	-0.944
Income					0.005	0.942
					-0.067	-0.076
Gated					0.022	0.571
					-0.923	-0.470
Homeowner					0.093	0.746
					-0.601	-0.555
Urban					-1.012	0.140
					-0.879	-0.208
Household Size					0.156	0.809
					-0.203	-0.213
Female-headed Household					-0.287	0.318
					-0.751	-0.301
Constant	0.042***	0.047***	0.043***	0.047***	-3.860**	2.559
	-0.014	-0.015	-0.014	-0.015	-1.753	-4.857

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Appendix B: Verbatim questions from the NCVS and SVS

V2026 – Household income

Value	Label
1	Less than $5,000
2	$5,000 to $7,499
3	$7,500 to $9,999
4	$10,000 to $12,499
5	$12,500 to $14,999
6	$15,000 to $17,499
7	$17,500 to $19,999
8	$20,000 to $24,999
9	$25,000 to $29,999
0	$30,000 to $34,999
11	$35,000 to $39,999
12	$40,000 to $49,999
13	$50,000 to $74,999
15	$75,000 to $99,999
16	$100,000-$149,999
17	$150,000-$199,999
18	$200,000 or more
98	Residue

Property Victimization Variables: These variables were used to create the dichotomous variable for having experienced property victimization. Data from all quarters in 2018, as well as the first two in 2019, were used to create an indicator for having experienced property victimization before receiving the treatment (cybervictimization) in the 2nd and 3rd quarters of 2019. Responses in the first two quarters of 2020 were used to indicate having experienced victimization after experiencing the treatment.

Something stolen or attempt: I'm going to read some examples that will give you an idea of the kinds of crimes this study covers. As I go through them, tell me if any of these happened to you in the last 6 months, that is, since _____ _____, 20__. Was something belonging to YOU stolen, such as

MARK OR ASK - Did any incidents of this type happen to you?

(a) Things that you carry, like luggage, a wallet, purse, briefcase, book
(b) Clothing, jewelry, or calculator
(c) Bicycle or sports equipment
(d) Things in your house - like a TV, stereo, or tools
(e) Things outside your home such as a garden hose or lawn furniture
(f) Things belonging to children in the household
(g) Things from a vehicle, such as a package, groceries, camera, or cassette tapes OR
(h) Did anyone ATTEMPT to steal anything belonging to you?

First, second, and/or third incident – (The following had no accompanying question, but were indicated by the respondent).

Burglary
Attempt burglary
Larceny
Attempt larceny
MV theft
Attempt MV theft
Vandalism

Violent Victimization Variables: These variables were used to create the dichotomous variable for having experienced violent victimization. Data from all quarters in 2018, as well as the first two in 2019, were used to create an indicator for having experienced violent victimization before receiving the treatment (cybervictimization) in the 2nd and 3rd quarters of 2019. Responses in the first two quarters of 2020 were used to indicate having experienced victimization after experiencing the treatment.

Attack, threat, theft: Location Cues: : (Other than any incidents already mentioned,) since _____ ___, 20__, were you attacked or threatened or did you have something stolen from you

MARK OR ASK - Did any incidents of this type happen to you?

(a) At home including the porch or yard
(b) At or near a friend's, relative's, or neighbor's home
(c) At work or school
(d) In places such as a storage shed or laundry room, a shopping mall, restaurant, bank, or airport
(e) While riding in any vehicle
(f) On the street or in a parking lot
(g) At such places as a party, theater, gym, picnic area, bowling lanes, or while fishing or hunting OR
(h) Did anyone attempt to attack or attempt to steal anything belonging to you from any of these places?

First, second, and/or third incident – (The following had no accompanying question, but were indicated by the respondent).

Rape
Attempt rape
Robbery
Attempt robbery
Assault
Attempt assault
Unwanted sexual contact against household member (With and without force)

Cybervictimization Variables: These variables were used to create the dichotomous variable for having experienced cybervictimization.

[Has anyone] Posted or threatened to post inappropriate, unwanted, or personal information about you on the Internet, this includes private photographs, videos, or spreading rumors?
. [Has anyone] Sent unwanted e-mails or messages using the Internet, for example, using social media apps or websites like Instagram, Twitter, or Facebook?

[Has anyone] Monitored your activities using social media apps like Instagram, Twitter, or Facebook?

Psychological Distress Variables: These variables were used to create the dichotomous checklist for respondent psychological distress.

Did any of these unwanted contacts or behaviors make you fear for your safety or the safety of someone close to you
Did any of these unwanted contacts or behaviors cause you substantial emotional distress?
Unwanted contacts or behaviors may affect people in different ways. Next I would like to ask you some questions about how the unwanted contacts or behaviors you experienced may have affected you. Q33. Did experiencing these unwanted contacts or behaviors lead you to have significant problems with your job or schoolwork, or trouble with your boss, coworkers, or peers?
Did experiencing these unwanted contacts or behaviors lead you to have significant problems with family members or friends, including getting into more arguments or fights than you did before, not feeling you could trust them as much, or not feeling as close to them as you did before?
How distressing were these unwanted contacts or behaviors to you? Were they not at all distressing, mildly distressing, moderately distressing, or severely distressing?
Considering all of these unwanted contacts or behaviors that have occurred over the past year, did you feel... Fearful or terrified?
Considering all of these unwanted contacts or behaviors that have occurred over the past year, did you feel...worried or anxious?
Considering all of these unwanted contacts or behaviors that have occurred over the past year, did you feel...sad or depressed?
Considering all of these unwanted contacts or behaviors that have occurred over the past year, did you feel...vulnerable or helpless?
Considering all of these unwanted contacts or behaviors that have occurred over the past year, did you feel...like you couldn't trust people?
Considering all of these unwanted contacts or behaviors that have occurred over the past year, did you feel...sick?
Considering all of these unwanted contacts or behaviors that have occurred over the past year, did you feel...stressed?
Considering all of these unwanted contacts or behaviors that have occurred over the past year, did you feel...unsafe?
Considering all of these unwanted contacts or behaviors that have occurred over the past year, did you feel...suicidal?
Considering all of these unwanted contacts or behaviors that have occurred over the past year, did you feel...some other way?
What were you afraid of happening as these unwanted contacts or behaviors were occurring? Were you afraid of…being killed?
What were you afraid of happening as these unwanted contacts or behaviors were occurring? Were you afraid of…someone close to you being harmed?

What were you afraid of happening as these unwanted contacts or behaviors were occurring? Were you afraid of…losing your job or job opportunities?
What were you afraid of happening as these unwanted contacts or behaviors were occurring? Were you afraid of… losing your social network, peers, or friends?
What were you afraid of happening as these unwanted contacts or behaviors were occurring? Were you afraid of… losing your freedom?
What were you afraid of happening as these unwanted contacts or behaviors were occurring? Were you afraid of…not knowing what might happen next?
What were you afraid of happening as these unwanted contacts or behaviors were occurring? Were you afraid of…losing your mind?