Technological Intimate Partner Violence: Victim impacts and technological perpetration factors

by

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Abstract

In emerging adulthood, the developmental period between ages 18 and 25, romantic relationships last longer and become more intimate and serious. This developmental period also marks the peak of intimate partner violence (IPV) rates across the lifespan. Individuals in this age group also rely on technology more heavily than other age groups, and use this technology as another means by which to perpetrate IPV. The current thesis investigated the impacts of victimization by such technological IPV (tIPV), as well as the importance of technology-related factors in the perpetration of tIPV. Two hundred and seventy-eight (204 female, 74 male) participants in an intimate relationship of at least three months completed an online survey. Participants reported on their perpetration of and victimization by in-person and tIPV as well as on a range of victim impacts and technology-related perpetration factors. Experiencing tIPV victimization was related to increased alcohol use for both men and women, and increased fear of partner for women. For depression, perceived stress, relationship satisfaction, quality of life, social support, and post-traumatic stress, tIPV victimization did not predict impacts above in-person victimization. The amount of technology usage as well as the amount of technological disinhibition both uniquely predicted tIPV perpetration, counter to the hypothesis that technological disinhibition would moderate the relationship between technology usage and tIPV perpetration. In-person IPV perpetration also significantly predicted tIPV perpetration, and when these variables were included, technology usage was no longer significant. Upon further investigation, social media use, but not texting, significantly predicted tIPV perpetration. While these results suggest some unique impacts and contributing factors to tIPV, overall these results highlight that tIPV often occurs within a broader pattern of abuse that includes in-person IPV. These results suggest that tIPV, while a new medium of aggression, is not necessarily distinct from in-person IPV. This

means that efforts should be made to integrate tIPV into IPV theory and practice, rather than to create a new field of research and practice based solely around tIPV.

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Technological intimate partner violence: Victim impacts and technological perpetration factors

In emerging adulthood, the developmental period between ages 18 and 25, romantic relationships last longer, and become more intimate and serious (Arnett, 2000). Presently, individuals in this age group also rely on technology more heavily than other age groups, reporting sending an average of 71 texts per day (Harrison & Gilmore, 2012). For emerging adults, social networking sites and text messaging are important for maintaining connections with family and friends (Subrahmanyan, Reich, Waechter, & Espinoza, 2008), conveying information and planning activities with family (Crosswhite, Rice, & Asay, 2014), establishing romantic relationships (Harrison & Gilmore, 2012), and as a pastime (Reid & Reid, 2007). Emerging adults consider texting appropriate across more social situations than any other adult age group (Forgays, Hyman, & Schrieber, 2014), and report texting in a wide range of situations, such as while on a date, to break up with a romantic partner, while at work, during religious services, or in the shower (Harrison & Gilmore, 2012). Even when emerging adults felt it was inappropriate to text during a social situation, many still reported engaging in text messaging during that situation (Harrison, Bealing, & Salley, 2015).

Technology can also be used to enact intimate partner violence (IPV) on one's significant other. IPV in dating relationships is highly prevalent among university students in emerging adulthood, with approximately 30% of individuals in relationships reporting that they have physically assaulted a dating partner in the past 12 months (Straus, 2004). In fact, it appears emerging adulthood may be the peak of IPV, as IPV risk decreases with increasing age in adulthood (for review, see Capaldi, Knoble, Shortt, & Kim, 2012). Additionally, younger individuals require only moderate levels of anger to perpetrate psychological aggression, whereas older individuals require higher levels of anger before they aggress (Elkins, Moore,

McNulty, Kivisto, & Handsel, 2013). There is ample evidence that technology can be used as another tool to enact IPV, and that technological IPV (tIPV) is related to in-person IPV (Borrajo, Gámez-Guadix, & Calvete, 2015; Dimond, Fiesler, & Bruckman, 2011; Korchmaros, Ybarra, Langhinrichsen-Rohling, Boyd, & Lenhart, 2013; Marganski & Melander, 2015; Schnurr, Mahatmya, & Basche, 2013; Stonard, Bowen, Lawrence, & Price, 2014; Watkins, Maldonado, & DiLillo, 2016; Woodlock, 2016; Zweig, Dank, Yahner, & Lachman, 2013). While tIPV is usually accompanied by offline IPV, approximately 25-30% of individuals who report victimization via technology by their partner report victimization via technology only (Marganski & Melander, 2015), and approximately 17% of perpetrators report engaging in technological IPV only (Korchmaros et al., 2013). Due to the prevalence of technology use among emerging adults, as well as the prevalence of both in-person and tIPV, it is important to gain an understanding of potential unique risk factors and harms of tIPV. This master's thesis will explore victim impacts and technology-related risk factors associated with tIPV, as well as explore how tIPV relates to other forms of IPV.

Terminology

For the purposes of this proposal, the term *social networking site* is defined as a website where individuals create personal profiles and communicate with others who use the same website, either by public posts or private messages (e.g., Facebook, Twitter, Instagram). The terms *texting* or *text messaging* refer to electronic communication that is sent and received by cell phones, either in a private conversation between two individuals or between a group. The term *electronic communication* is used to more broadly refer to both SNS and texting, as well as other forms of electronic communication such as e-mail. Finally, the term *technological intimate*

partner violence (tIPV) is used to refer to IPV enacted using any means of electronic communication or monitoring using technology.

Electronic Communication in Romantic Relationships

In romantic relationships, electronic communication has a variety of effects. Individuals in romantic relationships use text messaging to express affection, hurt partners, and broach confrontational topics, with the most commonly used function being to express affection (Coyne, Stockdale, Busby, Iverson, & Grant, 2011). While expressing affection is the most commonly noted function, electronic communication can also have a variety of negative impacts. Social networking sites such as Facebook can be used to manipulate, make others worry, and make others jealous, with many individuals stating that Facebook has negative effects on relationships overall, and that appropriate behavior on Facebook is a topic that must be discussed between partners (Fox, Osborn, & Warber, 2014). Similarly, cell phones are a source of conflict and rule-making in romantic relationships, with tensions arising in relationships over insufficient calling and text messaging between partners (Duran, Kelly, & Rotaru, 2011). Individuals expressed that constant contact could have a negative impact on relationships, as constant contact decreases what romantic partners could discuss when they saw each other in-person, decreasing the sense of intimacy (Storey & McDonald, 2014). Evidence from close, platonic relationships shows that feelings of entrapment, defined as guilt and pressure to respond quickly to mobile phone contact, predicted relationship dissatisfaction (Hall & Baym, 2011). Further, electronic communication keeps a record of the relationship, which can be looked back on after the relationship is over, increasing negative feelings (Storey & McDonald, 2014).

Despite these negative impacts, there are also benefits to electronic communication in relationships. For example, university students feel that online communication gives them the

opportunity to perfect what they want to say to romantic interests, and feel that it is possible to develop intimacy through electronic communication (Sherrell & Lambie, 2016). Individuals in long-distance relationships highlight that social networking sites can help them to connect with their partner as well as to gauge their partner's involvement and loyalty (Billedo, Kerkhof, & Finkenauer, 2015). Some individuals also feel that communicating over text made them feel more confident and sexually liberated (Storey & McDonald, 2014). Thus, electronic communication is an important tool for developing and maintaining romantic relationships, and there are unique benefits and potential harms associated with electronic communication that are often discussed between partners.

Intimate Partner Violence in Dating Relationships

Much of the previous IPV research focuses on married couples. As the present proposal focuses on dating couples in emerging adulthood, a brief discussion of similarities and differences between IPV in dating relationships versus marital relationships is warranted. First, not all relationships that are violent during dating continue to be violent after marriage (Shorey, Cornelius, & Bell, 2008). Conversely, some relationships become violent only after marriage, while others are violent throughout dating and marriage (Shorey et al., 2008). There are several important differences between dating versus marital relationships, such as the increased familial and economic attachment associated with marital relationships, and the increased peer pressure associated with adolescent and young adult dating (Shorey et al., 2008). Additionally, dating relationships can often be more short-term than marriage, and dating relationships show higher levels of physical and sexual violence, whereas long-term relationships show higher levels of psychological violence (Elkins et al., 2013). Finally, technology usage is high among dating

couples in emerging adulthood (Harrison & Gilmore, 2012), suggesting that this age group may be at particular risk for IPV perpetrated through technology.

Intimate Partner Violence and Technology

Technology creates new methods and opportunities for IPV to occur such as cyberstalking, technology-facilitated sexual violence, and psychological abuse perpetrated through technology. The first domain in which technology can be used to perpetrate IPV is psychological tIPV. Abusive individuals may threaten their partner over text or online (Dimond et al., 2011), post embarrassing information about a partner or ex-partner, or write hurtful public posts about their partner or ex-partner (Lyndon, Bonds-Raacke, & Cratty, 2011; Woodlock, 2016). Individuals in romantic relationships could also intentionally ignore their partner's online communication in order to hurt the partner (Watkins et al., 2016). Perpetrators of abuse can also create a sense of their omnipresence around the victim by constantly texting or phoning victims, creating a sense that the victim cannot escape (Woodlock, 2016). Additionally, technology allows individuals unlimited access to their ex-partner, so that abusive communications can continue after the relationship has ended (Woodlock, 2016).

The second domain in which technology can be used to perpetrate IPV is cyberstalking. Stalking in relationships has existed throughout history (Meloy, 1999) and is most likely to emerge in pre-existing relationships, rather than between strangers (Spitzberg & Cupach, 2003). Stalking in general can cause a wide range of harms to victims, such as disruptions at work or school, having to change residence, and experiencing violence (Spitzberg & Cupach, 2003). With the advent of the Internet and mobile phones, new methods to stalk victims have also emerged. Cyberstalking is a term that describes behaviors that (1) involve repeated threats or harassment, (2) use technology-based communication, and (3) that would make a reasonable

person concerned for their safety (Southworth, Finn, Dawson, Fraser, & Tucker, 2007). Cyberstalking occurs most often in relationships with ex-partners (Cavezza & McEwan, 2014; Drebing, Bailer, Anders, Wagner, & Gallas, 2014). Websites such as Facebook give the opportunity for ex-partners to engage in stalking behaviors such as unwanted primary contact (e.g., contacting the individual excessively), monitoring the partner or ex-partner closely (e.g., checking profile for updates, waiting for them to come online), or sending excessive invitations to events and groups (Chaulk & Jones, 2011; Draucker & Martsolf, 2010). Abusive partners can also use technologies such as global-positioning-systems (GPS) to stalk intimate partners, either through downloading phone applications onto victim's phones that allow them to be tracked, or installing GPS in vehicles (Woodlock, 2016). The negative psychological impacts of cyberstalking include feelings of fear, paranoia, anger, aggression, and helplessness, sleep disturbances, panic attacks, post-traumatic stress symptoms, distrust toward other people, and reports of decreased well-being (Drebing et al., 2014; Short, Linford, Wheatcroft, & Maple, 2014). Victims attribute motives of stalking as jealousy and revenge (Drebing et al., 2014). While cyberstalking frequently co-occurs with offline stalking, approximately one quarter of cases of cyberstalking occur through technology only (Drebing et al., 2014). Previously identified risk factors for perpetration of cyberstalking are low self-control and deviant peer relationships (Marcum, Higgins, & Nicholson, 2016). Along with increased opportunities to stalk intimate partners and ex-intimate partners, new norms around these behaviors have emerged as well. Adolescents defined electronic intrusion and online monitoring of their partner as appropriate and necessary for trust in a relationship, suggesting that behaviors that are typically considered stalking are becoming commonplace in adolescent relationships (Lucero, Weisz,

Smith-Darden, & Lucero, 2014). It is possible that these behaviors continue to be perceived as normative among emerging adults.

Because cyberstalking is a relatively new phenomenon, it may be difficult for individuals to identify. When presented with a vignette of cyberstalking, college students were unable to identify it as cyberstalking and college students were also less likely to report cyberstalking behaviors to law enforcement because they thought the behavior would stop (Alexy, Burgess, Baker, & Smoyak, 2005). However, it is not only cyberstalking that is difficult for individuals to identify and take seriously. When college students were presented with stalking vignettes in which the stalking perpetrator and victim had different relationships (i.e., stranger, acquaintance, or ex-partner), individuals only rated stalking between strangers as requiring police intervention, causing fear or apprehension, and causing mental or physical harm (Scott, Lloyd, & Gavin, 2010). This highlights a larger trend of perceptions of stalking of ex-intimate partners as being a less serious form of abuse, despite evidence of negative victim impacts (Drebing et al., 2014; Sheridan & Grant, 2007).

The third domain in which technology can be used to perpetrate IPV is sexual tIPV (Henry & Powell, 2016). Notably, research in this area is lacking, as the majority of research about sexual communication and technology has focused on consensual adolescent sexual communication, and considerably less research has focused on non-consensual sexual communication between adults (Henry & Powell, 2014). There are several ways in which technology-facilitated sexual tIPV can occur: (1) sexting coercion, which involves engaging in unwanted sexual behavior online or over text such as sending and receiving unwanted sexually explicit texts, pictures, or video; (2) creating, distributing, or threatening to distribute sexually explicit images without the other person's consent (Henry & Powell, 2016); and (3) posting

victim's personal details and contact information on a public website and advertising the individual as desiring sex with strangers (Powell & Henry, 2016). Threats of distributing sexual images have been used to keep sexual assault victims from reporting, and are used not only to embarrass and harass victims, but also to threaten, coerce, and control partners (Powell & Henry, 2016). Police officers have stated that the effects of sexual violence using technology on victims are "substantial and severe" due to the power and control that perpetrators can exercise at all times and at all distances from their partner (Powell & Henry, 2016).

Non-consensual pornography is a particular form of sexual tIPV. In non-consensual pornography, individuals post intimate photos of their ex-partners, at times accompanied by the individual's full name and contact information (Citron & Franks, 2014), and these photos are often subject to derogatory comments from other Internet users (Bates, 2016). In a qualitative study, female victims of non-consensual pornography reported severe distress, lower self-esteem and less confidence after being victimized (Bates, 2016). These women also reported severe mental health effects such as PTSD, anxiety, and depression, although causal effects could not be determined, and it is possible that other events contributed to these outcomes (Bates, 2016).

Much of the research done on tIPV focuses on developing valid measures of this construct via scale development. Scales differ in terms of whether they focus on a specific type of tIPV, such as cyberstalking (Burke, Wallen, Vail-Smith, & Knox, 2011; Chaulk & Jones, 2011), or attempt to capture all abusive technological behaviors that occur through technology (Borrajo et al., 2015; Marganski & Melander, 2016; Watkins et al., 2016). Scales also differ in regard to the year in which they were developed, with scales developed earlier falling behind on current terminology and capabilities of technology (Spitzberg & Hoobler, 2002).

Due to the wide variation in measures used to determine prevalence of tIPV, estimates vary greatly. Of studies that have examined prevalence in emerging adults, one study found perpetration and victimization rates for minor tIPV (e.g., calling names, swearing, or insulting a partner through technology) to be 93% for victimization and perpetration, and perpetration and victimization rates for severe tIPV (e.g., posting embarrassing information about a partner online, threatening a partner) to be 13% victimization and perpetration (Leisring & Giumetti, 2014). Another study estimated tIPV victimization experiences at 73% of college students (Marganski & Melander, 2015), while yet another estimated overall prevalence of victimization at 40% of college students (Wolford-Clevenger et al., 2016). Other studies have looked at cyberstalking between intimate partners specifically, and have found perpetration and victimization rates of 50% and 75% (Borrajo et al., 2015; Burke et al., 2011). Studies of adolescents found lower rates of victimization and perpetration, finding that 26.3% of youth had been victimized, and 11.8% had perpetrated tIPV (Zweig et al., 2013). Thus, previous research has yielded a wide range of prevalence estimates for tIPV, and further research is needed to clarify the prevalence of tIPV perpetration and victimization.

Results about gender differences have been similarly mixed. Several studies report no gender differences in victimization and perpetration of tIPV (Borrajo et al., 2015; Leisring & Giumetti, 2014; Wolford-Clevenger et al., 2016), while others have found that women perpetrate monitoring and controlling behaviors more often than men (Burke et al., 2011), and others still find that males score higher in perpetration of monitoring behaviors through technology than females (Sanchez et al., 2015). Several studies also report that females are victimized through technology more frequently than males (Reyns et al., 2012; Zweig et al., 2013). Here again,

further research is required in order to determine whether gender differences exist in perpetration and victimization via technology.

While a large amount of research has been concerned with defining and developing valid measures of online intimate partner abuse, considerably less research has investigated factors that relate to perpetration. Of this limited research, it has been found that males who score higher on a measure of hostile sexism are more likely to abuse partners via cell phone contact (Martinez-Pecino & Durán, 2016). It has also been found that individuals with higher self-rated attachment anxiety more frequently engage in online partner monitoring than those who do not (Reed, Tolman, & Sayfer, 2015; Reed, Tolman, Ward, & Sayfer, 2016). Here, it could be that electronic romantic communication creates a cycle of anxiety with three phases: (1) a social media trigger (for example, a picture of partner seen online, or a delayed response to a text); (2) anxiety response; and (3) engagement in electronic intrusion to relieve the anxiety (Reed et al., 2015). In this way, the behavior could become self-reinforcing. This was supported by a daily diary study that showed anxiety was associated with higher rates of Facebook jealousy and surveillance (Marshall, Bejanyan, Di Castro, & Lee, 2013). This study further found that anxious attachment in general was positively related to Facebook jealousy and surveillance, while avoidant attachment was negatively associated (Marshall et al., 2013).

The Context of the Internet and Technological Communication

Technological IPV is just one context in which aggressive communication and behaviors occur through technology. Other forms of online aggressive communication, such as cyberbullying and flaming (which is described as online communication with hostile intentions -- often containing profanity, obscenity, or insults), offer valuable insights into the culture of communication through technology.

While research into tIPV has more often been limited to defining the behavior rather than investigating causes, correlates, and victim impacts, research on cyberbullying has examined these areas more thoroughly. Students in grades five to eight highlighted that one of the unique harms associated with cyberbullying is that it is "non-stop" because victims are reachable everywhere (Mishna, Saini, & Solomon, 2009). This is corroborated by findings that children and adolescents who are victimized online, particularly those who experience sexual victimization, are twice as likely to report depressive symptomatology and substance use (Mitchell et al., 2007). Cyberbullying victimization is also related to suicidal ideation among children and adolescents, and in fact has shown a stronger association with suicidal ideation than traditional bullying (Gini & Espelage, 2014). While cyberbullying typically occurs between peers, it can also be perpetrated by adults towards children, by an unknown person, or by groups targeting a single individual. All of these forms of victimization are associated with fear for safety, and it is theorized that this fear leads to trauma symptoms (Sourander, et al., 2010). Thus, there is a wide range of victim impacts of cyberbullying.

There are also many theories about potential causes of cyberbullying. Students feel that the perceived anonymity of aggressors propels them to behave in ways that they would not otherwise due to less fear of repercussions and less ability to see how much victims were hurt by their behaviors (Mishna et al., 2009). In line with this, students who perpetrate cyberbullying score higher on a measure of moral disengagement, which is a cognitive process where individuals justify harmful behavior by loosening inner self-regulatory mechanisms, reducing the sense of guilt and shame (Pornari & Wood, 2010). This is theorized to be due to distance from the victim creating a sense in perpetrators that consequences of harmful acts do not cause as many negative feelings in victims when perpetrated through technology (Pornari & Wood,

2010). This is corroborated by findings that show that 70% of in-person bullies felt remorse after bullying, whereas only 42% of cyberbullies felt remorse (Slonje, Smith, & Frisen, 2012).

There also appears to be a spillover effect from aggressive online communication to aggression in the real world. For example, discussions of antisocial activities over text message predict increases in reports of rule-breaking and aggressive behavior in the real world (Ehrenreich, Underwood, & Ackerman, 2014). Further, cyberbullying appears to be its own dimension of aggression, separate from overt and relational forms of aggression, suggesting that there could be unique risk factors relating to cyberbullying (Mehari & Farrell, 2016). Several potential risk factors have been identified. For example, cyberbullying perpetration and victimization are associated with internet addiction, substance use, and depression, suggesting these could be potential risk factors, although they could also be outcomes (Chang et al., 2015). While the majority of research on cyberbullying has investigated this behavior among elementary, middle, and high school students, there is evidence that this behavior persists among college students, and that at these ages it is used to inflict harm or retaliate when there are issues in relationships (Crosslin & Golman, 2014).

While both tIPV and cyberbullying occur between individuals who are known to each other in the real world, technological aggression occurs between strangers as well. Online flaming, which often contains profanity, obscenity, or insults that inflict harm on a target is commonplace online (Alonzo & Aiken, 2004). Flaming is a pastime for those who seek disinhibition, which is a form of sensation-seeking, and flaming has been found to reduce anxiety in individuals who engage in it regularly (Alonzo & Aiken, 2004). While individual difference factors such as sensation-seeking and assertiveness are related to flaming, contextual factors of the Internet are also related. For example, prevalence of flaming leads people to see these

aggressive behaviors as more acceptable, suggesting different normative beliefs for online communication where aggression is accepted to a greater extent than it is in face-to-face communication (Hmielowski, Hutchens, & Cicchirillo, 2014). This has been corroborated by experimental research, which finds that participants were more likely to comment aggressively online when the group norms of the commenting were more aggressive (Rosner & Kramer, 2016), and research demonstrating that informal speech and flaming rates were higher among computer-mediated communication than in videoconference or face-to-face communication (Castellá, Abad, Alonso, & Silla, 2000).

I^3 Theory

The I^3 theory of IPV perpetration proposes a useful framework through which to view risk factors for IPV and tIPV perpetration in both dating and married couples (Finkel, DeWall, Slotter, McNulty, Pond, & Atkins, 2012). According to this theory, risk factors contribute to IPV perpetration through at least one of three processes: (1) instigation, which refers to exposure to specific partner behaviors that trigger an urge to aggress (i.e., perceived provocation); (2) impellance, which refers to dispositional factors that contribute to an individual experiencing strong urges to aggress (e.g., dispositional aggressiveness); and (3) inhibition, which refers to factors that increase the likelihood that people will not aggress (e.g., self-regulation) (Finkel et al., 2012). These three factors come together to create a "perfect storm" where IPV perpetration is most likely to occur when a partner feels provoked, has strong dispositional impellance factors, and weak inhibition. The strength of this theory to predict IPV perpetration has been found with a variety of research methods including experiments, survey data, daily diaries, and longitudinal studies of newly married couples (Finkel et al., 2012).

There are several specific risk factors associated with IPV perpetration that fit within the I^3 theory of IPV perpetration. While alcohol use, a disinhibiting factor, is associated with IPV (Moore, Elkins, McNulty, Kivisto, & Handsel, 2011), not all those who drink are aggressive (Foran & O'Leary, 2008). Rather, other dispositional factors such as jealousy and rumination influence this relationship, such that those with high levels of jealousy and/or rumination show a stronger association between problem drinking and IPV (Foran & O'Leary, 2008; Watkins, DiLillo, & Maldonado, 2015). Similarly, dispositional risk factors such as trait anger and childhood physical abuse history interact with alcohol consumption, such that the interaction between trait anger and childhood physical abuse becomes stronger as alcohol consumption increases (Maldonado, Watkins, & DiLillo, 2015). Specific self-regulation factors, such as impulsivity, are also associated with IPV perpetration, such that the dispositional factor of trait anger mediates the relationship between the inhibitory factor of impulsivity and IPV perpetration (Shorey, Brasfield, Febres, & Stuart, 2011). As previously noted, there is a proportion of IPV perpetrators who enact IPV through technology only (Korchmaros et al., 2013). This suggests that there could be unique risk factors associated with tIPV perpetration. For example, there could be unique impellance, or personality, factors associated with perpetration of technological, but not in-person IPV, or it could be that technology itself acts as a disinhibiting factor, so that extra disinhibition is not required to perpetrate IPV. Investigation into these potentially unique risk factors would provide information about what differentiates those who aggress via technology versus in person, and would provide potential targets for prevention of tIPV.

Theories of Technological Disinhibition

There are many theories suggesting that communicating with people through technology can act as a disinhibiting factor. Perhaps the most popular of these theories is the online

disinhibition effect (Suler, 2005). This theory discusses seven factors that are related to people's uninhibited behaviors and communication online: (1) anonymity, which allows people to detach their online actions from their "real" identity, thus making the online self a compartmentalized self; (2) invisibility, which liberates individuals from worrying how they look or sound, and about how others look and sound in response, giving individuals courage to act in ways they otherwise would not;(3) asynchronicity, where people do not interact with each other in the same moments of time, meaning communicators do not have to cope with immediate reactions; (4) solipsistic introjection, where people begin to read online communications not as a message from another person, but as a voice that exists in one's own head; (5) dissociative imagination, where people feel that the online world is separate and distinct from responsibilities of the real world; (6) attenuated status and authority, where a lack of typical social cues about status, such as dress, body language, and setting, means every individual can have equal power; and (7) individual differences (Suler, 2005). A scale to measure individual differences in online disinhibition has been developed based off of these principles, and scores on this scale have been shown to be related to cyberbullying, suggesting that those who feel more disinhibited in online communication are more likely to cyberbully (Udris, 2014; 2016).

Various experiments and theories provide evidence for or cast doubt upon various aspects of this online disinhibition effect, specifically anonymity, invisibility, and attenuated status and authority (Suler, 2005). First, while various theories of online disinhibition cite anonymity as being paramount for online disinhibition (e.g., Runions, Shapka, Dooley, & Modecki, 2013; Suler, 2005), evidence has not supported this claim. First and foremost, many types of technology-mediated aggression, such as cyberbullying and tIPV, are perpetrated by known individuals. Beyond this, even when anonymity is possible, it has not been shown to consistently

effect online disinhibition. For example, one study manipulated anonymity, invisibility, and eye contact (Lapidot-Leffler & Barak, 2012). Here, participants were either anonymous (they were guaranteed random aliases) or not anonymous (they were assigned a list of personal identifiers), invisible (no webcam) or visible (a webcam giving a side view of each participant's upper body), making eye contact (via a webcam mounted at eye level) or not making eye contact (no webcam) (Lapidot-Leffler, & Barak, 2012). The results of this study showed that a lack of eye contact was the primary contributor to the effects of online disinhibition, and that anonymity did not affect disinhibition. Further, an analysis of online blogs found that individuals disclosed more information in blog entries when they were visually identified on their blog (i.e., there was a picture of them on their blog) (Hollenbaugh & Everett, 2013), and not completely anonymous. However, this analysis also highlighted that anonymity is at times related with more disclosure, as they found women and young people disclosed more when their real name was not on their blog (Hollenbaugh & Everett, 2013). In another study, manipulations of anonymity did not affect aggression in online comments, but rather the level of aggression in other comments the participants saw affected participant comment aggression levels (Rosner & Kramer, 2016). An opposing theory of online disinhibition, digital social norm enforcement, suggests that anonymity is not a factor in technological aggression (Rost, Stahel, & Frey, 2016). Rather, this theory states that one of the major motivators for technological aggression is the enforcement of social norms and standing up for moral principles. Thus, they suggest there is no reason for anonymity in this framework because people wanted to be identified as standing up for what they believe in (Rost et al., 2016). Overall, this body of research suggests anonymity is not essential for online disinhibition, suggesting that online disinhibition can occur when individuals are known to each other, such as in romantic relationships.

In contrast to anonymity, there is some evidence that invisibility is an important factor in online disinhibition. Individuals have been shown to engage in higher levels of aggressive communication when online communication occurs over text-based chat (i.e., when they are invisible), rather than via videoconference or face-to-face (Castellá et al., 2000). Other theories, such as the reduced social contextual cues theory (for review, see Denegri-Knott & Taylor, 2005) highlight the importance of reduced social cues in computer-mediated communication because individuals tend to be more self-orientated and less concerned with feelings and evaluations of others when social cues are absent (Denegri-Knott & Taylor, 2005). Another theory of online culture highlights that something fundamental is lost when people are not visible to each other, suggesting that a face-to-face "encounter is ethical because the concrete, embodied nature of person-to-person contact comes with a choice: we can either accept this responsibility for the other or be violent towards them. Thus, it is this proximal, embedded encounter, not abstract contemplation, which inherently and necessarily creates the possibility for ethics. In short, faces matter; being together matters" (Miller, 2012, p. 278). In support of this, they cite a study of an online support group for breast cancer patients (Orgad, 2005), where group members who disagreed with the prevailing group views or had less to offer the group were rejected and marginalised. This suggests that sharing online, even if it is intimate, does not necessarily lead to caring or ethical responsibility, in part because of this disinhibiting invisibility of the other (Miller, 2012).

While research surrounding the Internet's ability to affect self-perceived power and authority is scarce, there is evidence that self-perceptions of power, in general, lead to disinhibited behavior. Power is correlated with less emotion suppression, and even when individuals are assigned to conditions of feeling powerful or powerless, those who felt powerless

suppressed their emotions more than those who felt powerful (Petkanopoulou, Willis, & Rodriguez-Bailón, 2012). Further, those who were assigned more resources in a group task also exhibited more disinhibition in attitude expression (Anderson & Berdahl, 2002). Thus, if online communication truly does equalize individuals in terms of perceptions of power, as is suggested by Suler (2005), this could act as a disinhibiting factor for those who feel the Internet affords them more power.

Questions for Further Investigation

Despite increased attention to aggression through technology, including intimate partner violence enacted through technology, many aspects of this phenomenon have attracted scarce investigation. The existing literature has not adequately attended to victim impacts associated with tIPV. Due to the high rates of tIPV (Borrajo et al., 2015), research in this area is essential for understanding what types of issues victims may require assistance with. Further, it would be useful to comparatively identify victim impacts between those victims who are aggressed against online only, offline only, or both, to determine relative harms associated with these different forms of aggression. Notably, the severity of tIPV varies widely, and thus uniform victim impacts would not be expected across those who have experienced tIPV. This is also a fruitful area for research because norms around what individuals in relationships consider abusive or non-abusive may be changing. For example, adolescents have been shown to believe large amounts of monitoring is a necessary and positive part of a romantic relationship (Lucero et al., 2014). It is important to determine what the impacts of these monitoring behaviors are to determine whether these high levels of monitoring are indeed harmful, or whether healthy relationships can exist with this heightened monitoring.

There is also little known about risk factors that are unique to tIPV. As noted, approximately 17% of those who perpetrate tIPV do so through technology only (i.e., not in face-to-face interactions) (Korchmaros et al., 2013). It is important to investigate what factors predispose these individuals to aggress through technology, as these individuals appear to be those who would not be aggressive if they were not able to do so through technology. Factors such as expectancies of electronic communication levels of online disinhibition and quantity of technology usage could contribute to this online aggression.

The Current Study

The purpose of the current study is to explore previously under-researched aspects of tIPV. Specifically, I aim to answer two key research questions:

1. Does intimate partner victimization through technology (tIPV) lead to victim impacts over and above victimization in person?
2. How do technology usage factors (e.g., amount of usage, amount of online disinhibition) interact to predict tIPV perpetration?

Research question (RQ) 1: Victim impacts. The first aim of this thesis is to investigate the victim impacts related to tIPV. In previous investigations of the impacts of specific forms of tIPV, such as non-consensual pornography, impacts such as severe distress, lower self-esteem, less self-confidence, and mental health symptoms, such as post-traumatic stress symptoms, were identified (Bates, 2016). Similarly, investigations into cyberstalking revealed victim impacts to be feelings of fear, anger, aggression, and helplessness, sleep disturbances, distrust toward other people, and reports of decreased well-being (Drebing et al., 2014; Short et al., 2014). Notably, these studies included cyberstalking as perpetrated by individuals with a variety of relationships to the victim, and did not focus on cyberstalking by intimate partners specifically (Drebing et al.,

2014). Several studies have also found relationships between tIPV victimization, depression (Zweig, Lachman, Yahner, & Dank, 2014), and alcohol use (Van OUytsel, Ponnet, Walrave, & Temple, 2016), however, these studies failed to control for other forms of victimization. Thus, it is unclear what unique impact tIPV victimization may have in the context of other forms of IPV victimization. Notably, one study has found a relationship between alcohol use and tIPV victimization even after controlling for other forms of victimization (Bennett, Guran, Ramos, & Margolin, 2011). Further, several victim impacts that have well-established associations with in-person IPV, such as post-traumatic stress symptoms and fear of partner (Amanor-Boadu et al., 2011; Coker et al., 2005; O'Leary, Foran, & Cohen, 2013; Kar & O'Leary, 2010; Randle & Graham, 2011) have not been quantitatively investigated in relation to tIPV. Thus, an exploration of victim impacts of tIPV that incorporates the full range of tIPV behaviors (i.e., psychological tIPV, sexual tIPV, and cyberstalking), controls for in-person experiences of victimization, and explores a broader range of victim impacts to identify precisely which areas of functioning may be impacted is warranted. Such an investigation would be helpful in determining service needs of victims. Thus, in the current study I controlled for in-person victimization in order to determine what unique impacts tIPV may have above those that occur from in-person victimization. Specifically, I sought to explore the effect of tIPV victimization on perceived stress, depression, fear of partner, quality of life, alcohol use, relationship satisfaction, social support, and post-traumatic stress symptoms. I also investigated whether victim impacts differ by gender, as previous research on in-person IPV has found that negative effects of IPV victimization are stronger for women (Prospero, 2009).

RQ2: Technology-related perpetration factors. I also sought to investigate how factors related to technology use and attitudes are related to the perpetration of tIPV. Limited previous

research has investigated factors related to tIPV perpetration, and has focused on perpetration factors that are unrelated to technology usage and attitudes. For example, both hostile sexism and attachment anxiety have been found to be related to various types of tIPV (Martinez-Pecino & Durán, 2016; Reed et al., 2015; Reed et al., 2016). However, both of these factors have also been shown to be related to IPV generally (e.g., Doumas, Pearson, Elgin, & McKinley, 2008; Smith & Stover, 2015; Whitaker, 2013). While knowledge that there are common risk factors for technological and in-person IPV is valuable, it is important to investigate whether there are any unique factors related to tIPV perpetration in order to determine whether risk factors and targets for intervention differ between aggressors who utilize different media to perpetrate IPV. Previous research on adolescent cyberbullying has identified both high levels of technology usage (Chang et al., 2015) and self-reported online disinhibition (Udris, 2014) as associated with cyberbullying perpetration. However, to my knowledge, no previous research has investigated the relative importance of these factors to tIPV perpetration. For example, it could be that the level of online disinhibition moderates the relationship between amount of technology usage and perpetration of deviant behaviors online. Instead, research on tIPV has focused on "risky" technology usage (e.g., looking for new friends on the Internet) as predictive of both tIPV perpetration and victimization (Jenaro, Flores, & Frías, 2018; Van Ouytsel, Ponnet, & Walrave, 2016). While this is valuable, more research is needed to determine whether even less risky forms of technology usage relate to tIPV perpetration, and how technological disinhibition may influence this relationship. Thus, I sought to determine how technology use and online disinhibition interact in order to increase risk of perpetration of tIPV. Due to the I^3 theory of IPV perpetration's assertion that disinhibiting factors are important in precipitating IPV perpetration (Finkel et al., 2012), I hypothesized that self-reported technological disinhibition will moderate

the relationship between technology usage and tIPV perpetration such that technology usage will be related to tIPV perpetration only for those who also report high levels of technological disinhibition.

Methods

Participants

Data were collected from 315 participants. Participants were recruited from the University of Victoria psychology participant pool. To be eligible for the study, participants must have been in a romantic relationship for at least three months, and must not be living with or married to their partner. Thirty-six participants failed to meet this criteria, and thus were excluded from further analysis. One additional participant was excluded since they reported their romantic partner's age as 10 years old. Thus, the results from 278 participants are presented in this analysis (see Table 1 for a summary of participant demographic information). Participant ages ranged from 17 to 25 (M = 20.5, SD = 1.9), and their partner's ages ranged from 17 to 44 (M = 21.4, SD = 3.4). Reported relationship lengths ranged from three to 101 months (M = 18.7, SD = 15.8).

Table 1

Demographic Information of Participants

Characteristic	*n*	*%*
Gender		
Male	74	26.6
Female	204	73.4
Relationship Status		
Dating one person, casually	24	8.6
Dating one person, committed	253	91.0
Dating multiple people, casually	1	.4
Sexual Orientation		

Heterosexual/straight	243	87.4
Gay or lesbian	4	1.4
Bisexual	29	10.4
Other	1	.4
No Response	1	.4
Education Level		
Grade 12	33	11.9
One year post-secondary	71	25.5
Two years post-secondary	56	20.1
Three years post-secondary	69	24.8
Four years post-secondary	35	12.6
Five years post-secondary	14	5.0
Living Situation		
In university residence	25	9.0
With parents or guardians	79	28.4
Off campus, with roommates	146	52.5
Off campus, alone	28	10.1
Job Status		
Employed full-time	2	.7
Employed part-time	48	17.3
Student, full-time	207	74.5
Student, part-time	4	1.4
Unemployed	6	2.2
Other	10	3.6
No Response	1	.4
Estimated Family Income Growing Up		
Less than $35,000	8	2.9
$35,000-$60,000	49	17.7
$60,000-$85,000	73	26.4
$85,000-$110,000	78	28.2
More than $110,000	69	24.9
No Response	1	.4
Met Current Partner Through Technology		
Yes	45	16.2
No	233	83.8
Ethnic Background*		
White	229	82.4
African	5	1.7

Latino/Hispanic	10	3.4
Indigenous	1	.4
Middle-Eastern	8	2.9
East Asian	32	11.5
South Asian	11	4.0
Caribbean	1	.4
Other	5	1.7
Citizen of Canada		
Yes	246	88.5
No	32	11.5

Note. *Individuals could select as many ethnic backgrounds as were applicable to them, and thus the total ethnic backgrounds selected sums to greater than the total number of participants, and the percentages do not add up to 100%.

Procedures

The protocol for the current study was approved by the University of Victoria Human Research Ethics Board. Participants signed up to participate via the psychology participant pool online portal. This participant pool includes students from 100-level, 200-level, and 300-level psychology courses, and thus participants could have been enrolled in a psychology course at any of these levels. They completed an anonymous online survey (created with LimeSurvey) at a specified time in a lab on the University of Victoria campus under the supervision of a research assistant. Participants completed this study in groups of up to 15 individuals. There was always at least one computer between participants, and cardboard dividers were set up to maximize privacy. First, participants were presented with a consent form detailing the nature of the survey and the types of questions they can expect to answer. Specifically, participants were told they would be answering questions about their relationship aggression, aggressive dating behaviors, communication, technology usage, and a variety of mental health and well-being outcomes. Participants were informed that the nature of the questions could be distressing or triggering.

They then filled out self-report questionnaires that asked them about their perpetration of and victimization by their partner, potential victim impacts, and their technology usage and self-rated online disinhibition. Upon completion of the study, participants had the opportunity to ask any questions they had, and were given a debriefing form which better informed participants of the nature of the study as well as a list of campus and community resources. No participants withdrew from the study during data collection or did not answer large portions of the survey.

Measures

Aggression. Several measures were used to assess various forms of IPV in this sample. This included a measure of physical and psychological IPV victimization and perpetration, sexual IPV victimization and perpetration, intimate partner stalking victimization and perpetration, and tIPV victimization and perpetration.

Technological intimate partner violence. Self-reported frequency of perpetration and victimization of IPV through technology was obtained using the Cyber Aggression in Relationships Scale (CARS; Appendix A; Watkins et al., 2016). The CARS contains three subscales: (1) psychological cyber aggression (5 items), (2) sexual cyber aggression (6 items), and (3) stalking cyber aggression (8 items). For each item, respondents report the frequency with which they perpetrated or were victimized through certain behaviors in the past three months on a scale of 0 ("this never happened") to 6 ("more than 20 times in the past 3 months). Respondents are also given an option to indicate whether a behavior has happened "not in the past 3 months, but it did happen before" by selecting option 7. Here again, participants report on their own behaviors and their partner's behaviors. Example items from each subscale include "I checked my partner's e-mail account to see who they were talking to or e-mailing without their permission" (stalking), "My partner pressured me to send sexual or naked photos of myself to

them" (sexual), and "I used information posted on social media to put down or insult my partner" (psychological). Subscale totals are calculated by summing responses to items in each subscale. Before calculating the sums of each subscale, responses of "not in the past 3 months, but it did happen before," are re-coded from 7 to 0, so that subscale scores reflect frequency of behaviors in the past 3 months. Thus, total scores on subscales differ based on the number of items in each subscale. Each subscale total can range from 0 to 6 times the number of items in the subscale. For example, the stalking cyber aggression scale can range from 0 to 48. The CARS has shown convergent validity with scales measuring in-person IPV, trait anger, and relationship jealousy (Watkins et al., 2016).

Factor structure of the CARS. Since the scale I used to assess tIPV is relatively new and has not been utilized extensively in research, I first sought to replicate the factor structure that was established previously (Watkins et al., 2016). The original authors found support for a three-factor model of tIPV: sexual, cyberstalking, and psychological. They excluded two items from their sexual subscale, which I added back into the scale in order to see if they may fit into the factor structure with a different sample. To evaluate the factor structure, I used confirmatory factor analysis (CFA) to assess the fit of the three-factor model reported by the original authors. CFAs were conducted using maximum likelihood (ML) estimation, an iterative process where unknown parameters are estimated and re-estimated in order to obtain the eventual estimate that results in the best fit of the model-implied matrix to the observed variance-covariance matrices. The "lavaan" package in R Studio was used to conduct CFAs (Rosseel, 2012). Model fit was evaluated using the comparative fit index (CFI), where values of .95 or higher indicate good fit (Bentler, 1990), and the root mean square error of approximation (RMSEA), where values of .05 or less indicate good fit, and values of .05 to .08 indicate adequate fit (Steiger, 1990).

When CFAs failed to yield satisfactory factor structures, follow-up exploratory factor analyses (EFAs) were completed to determine if any statistically sound and theoretically coherent structure could be established for the CARS. EFAs were run using the "psych" package in R Studio (Revelle, 2018). I chose to fit the models using an oblique rotation as I assumed there would be some correlation between the factors given that there are likely to be correlations between various types of aggressive behaviors (Preacher & MacCallum, 2003). I also chose to use ML estimation in this EFA, as the use of ML allows for the use of similar fit indices as are used in CFA, which thereby gives me the ability to assess the appropriate number of factors for the model (Preacher & MacCallum, 2003). Thus, the RMSEA was used to evaluate model fit in the same way as described previously. A threshold of .3 was used to determine which factor an item loaded onto.

Perpetration. I first sought to replicate the factor structure of the CARS (Watkins et al., 2016). In the original validation, the authors dichotomized the data before determining the factor structure and used item factor analysis to compute their factor structure (Watkins et al., 2016). However, due to the noted drawbacks to dichotomization (MacCallum, Zhang, Preacher, & Rucker, 2002), I maintained my data on a Likert scale from 0 to 6. I fit a three-factor model of tIPV perpetration, with one factor containing items comprising a cyberstalking subscale (8 items), the second factor containing items comprising a technological sexual aggression subscale (6 items), and the third factor containing items comprising a technological psychological aggression subscale (5 items). This factor structure replicates that reported in the original article, with two additional items in the sexual aggression subscale included here that were dropped from the original scale. Fit indices indicated poor overall fit for this model (CFI = .78; RMSEA = .115). Due to this poor fit, I excluded the same items that were excluded in the original article

(Watkins et al., 2016) to determine if these items were responsible for the poor fit. I then ran a second three-factor model, with the only difference from the previous model being that the sexual aggression subscale contained four items as opposed to six. Here again, fit indices indicated poor overall fit (CFI = .77; RMSEA = .107).

Because neither CFA provided an adequate fit to the data, I ran follow-up exploratory factor analyses (EFAs). Parallel analysis was used to determine the maximum appropriate number of factors. Parallel analysis is a method that assists researchers in determining how many factors in a factor structure will be more meaningful than those that occur by chance (O'Connor, 2000). A parallel analysis (Horn, 1965) suggested a maximum of eight factors would be acceptable in an EFA. Thus, EFAs ranging from two to eight factors were run to determine the best factor structure for the scale measuring tIPV perpetration. The fit indices for the two, three, and four-factor models indicated poor fit (RMSEA > .10), and the factor structures of the models with five or more factors all had at least one factor which contained only one item, which is generally considered undesirable (Preacher & MacCallum, 2003). Throughout the various numbers of factors, several items also consistently failed to load onto any factor. Thus, EFAs also yielded no satisfactory factor structure for the scale. Because no statistically sound subscales could be identified, I used a full-scale score for tIPV perpetration throughout my analyses. The reliability of this full-scale score in the current sample was acceptable at .81.

Victimization. The same process as described above was undertaken to explore the factor structure of tIPV victimization as measured by the CARS. The original three-factor model containing eight items to measure cyberstalking, six to measure sexual technological victimization, and five to measure psychological technological victimization demonstrated mediocre to poor fit (CFI = .68; RMSEA = .099). Next, the two sexual technological

victimization items excluded from the original scale were excluded from analysis, and the CFA was run again. Once again, fit indices for this model indicated mediocre to poor fit (CFI: = .81; RMSEA = .077).

Due to the inadequate fit of hypothesized CFA models, I ran follow-up EFAs to determine if a statistically sound factor structure could be established. A parallel analysis suggested a maximum of seven factors would be acceptable in an EFA. Thus, EFAs where the number of factors ranged from two to seven were run. Models with two and three factors indicated mediocre fit (RMSEA > .8), while models with five or more factors indicated adequate fit (RMSEA < .08), but resulted in factor structures that contained factors with only one item. Here again, several scale items failed to load onto any factor. The four-factor model demonstrated both adequate fit (RMSEA = .07), and each factor had at least two items. However, several items failed to load onto any factor, and the items that clustered together within the established factors were not theoretically coherent (see Table 2). Factor 4 appears to be a technological sexual victimization factor, although it notably consists of only two items, while the other items designed to measure sexual victimization either failed to load onto any factor, or are distributed within other factors. Factor 1 is almost entirely comprised of items designed to measure cyberstalking, with the exception of one item originally conceptualized as measuring technological psychological victimization. It could be that Factor 2 (which contains one item each from the original cyberstalking, psychological, and sexual victimization scales) is a factor representing a more relational, indirect pattern of technological aggression, where the victimization is not directly from one's partner, but rather is experienced through the sharing of unwanted information with third parties. The theoretical connection between the items that comprise Factor 3 appears less clear. Here again, the factor is comprised of items originally

belonging to the cyberstalking, psychological, and sexual victimization subscales. However, the items range from highly active forms of abuse (e.g., sending of explicit photos) to avoidant forms of abuse (e.g., intentionally ignoring technological communications) to indirect forms of abuse (e.g., posting hurtful content on social media). Thus, it is unclear what underlying construct such a factor would represent, and thus the four-factor structure was deemed inadequate. Here again, I chose to proceed using a full-scale score for tIPV victimization for further analyses. The reliability of this full-scale score in the current sample was acceptable at .80. Although the results of factor analyses for both victimization and perpetration of tIPV were unclear, it was very clear that the simple splitting of behaviors by type of tIPV (cyberstalking, psychological, or sexual abuse) was not supported.

Table 2

Pattern Matrix for the Four-factor Model of the CARS Victimization Items.

Subscale & Item	Factor			
	1	2	3	4
Factor 1 (7 items)				
My partner checked my e-mail account to see who I was talking to or e-mailing without my permission.	.62			
My partner kept tabs on my whereabouts using social media.	.44			
My partner checked my phone to see who I was talking to or texting without my permission.	.70			
My partner checked or tracked my Internet activity without my permission.	.77			
My partner sent threatening or harassing messages to me via text or social media.	.39			
My partner used my social media account to view my activity without my permission.	.87			
My partner sent repeated online messages or texts asking about my location or activities.	.35			
Factor 2 (3 items)				
My partner shared private or embarrassing information about me via text or social media without my permission.		.83		
My partner shared intimate or sexual information about me via text or social media without my permission.		.90		
My partner took information from my phone, e-mail, or social media profile without my permission. Speaking calmly to my		.30		

Subscale & Item	Factor	
partner when we disagree		
Factor 3 (4 items)		
My partner wrote or posted content on social media that they knew would hurt my feelings.	.48	
My partner sent an explicit or sexual photo of themselves when they knew I did not want to see it.	.35	
My partner used GPS technology to track my location without my permission.	.72	
My partner intentionally ignored my phone calls or text messages in order to hurt my feelings.	.33	
Factor 4 (2 items)		
My partner asked me online for sexual information about myself when I did not want to tell.		.82
My partner pressured me to send sexual or naked photos of myself to them.		.37
Items that failed to load onto factors		
My partner used information posted on social media to put me down or insult me.		
My partner posted a sexually suggested message or picture to my online profile that I did not want.		
My partner tried to make me talk about sex online when I did not want to.		

In-person intimate partner violence. Self-reported frequency of perpetration and victimization of psychological and physical IPV in person was measured using the Conflict Tactics Scale Revised (CTS2; Straus, Hamby, Boney-McCoy, & Sugarman, 1996). The CTS2 contains five subscales. For the current project, I used two subscales from the CTS2: psychological aggression (8 items) and physical assault (12 items). Respondents report on both their own behaviors and their partner's behaviors towards them. Example items include "Have you shouted or yelled at your partner?" (psychological aggression) and "Has your partner slapped you?" (physical assault). Participants respond with the frequency that certain behaviors have happened in the past three months, ranging from 0 ("never") to 6 ("more than 20 times"). Scores from each subscale are summed to obtain subscale scores. Possible ranges of subscale scores differ based on number of items in the subscale. For all subscales, the minimum total

score is 0 and the maximum total score is 6 multiplied by the number of items in that subscale. Thus, the physical assault subscale, which has 12 items, has scores that can range from 0 to 72, and the psychological aggression subscale, which has 8 items, has scores that can range from 0 to 48.

In a study of the CTS2 where participants were university dating couples, the CTS2 was found to have adequate reliability and validity (Straus, 2004). In the current study, alpha coefficients were adequate at .74 for physical victimization, .71 for psychological victimization, and .71 for psychological perpetration, and poor at .60 for physical perpetration. The CTS2 has shown convergent validity with measures of childhood physical abuse and dominance in romantic relationships. It did not correlate highly with a social desirability scale (Straus, 2004).

Sexual coercion and assault. To measure sexual IPV victimization and perpetration, I used an adapted version of the Sexual Experiences Survey (SES; Appendix B; Koss & Oros, 1982; Testa, VanZile-Tamsen, Livingston, & Koss, 2004). This survey was originally developed to capture a greater range of severity of sexual victimization and perpetration than other scales such as the CTS2 (Koss & Oros, 1982). The original measure was not specifically designed to assess sexual violence within dating relationships, and thus I adapted it to assess sexual violence between partners. The original measure also featured only a victimization scale for women, and only a perpetration scale for men. Therefore, I further adapted the measure to use gender neutral language, and duplicated each item such that respondents report on both their experiences of victimization and perpetration of each behavior. Finally, the original scale asked whether the behavior had ever occurred, to which respondents could choose “yes” or “no.” In order to match the frequency reporting that is captured within the other measures of aggression utilized in this study, I adapted the scale such that respondents report the frequency of a behavior’s occurrence

in the past three months. Thus, the final adapted scale consists of 26 items, 13 of which measure victimization and 13 of which measure perpetration. Each item is responded to on a scale of 0 ("this never happened") to 6 ("more than 20 times in the past three months). Thus, subscale scores can range from 0 to 78, with higher scores indicating higher levels of sexual coercion and violence. Example items include "I had sexual intercourse with my partner even though I didn't really want to because my partner threatened to end our relationship otherwise" and "I obtained sexual intercourse with my partner by saying things I didn't really mean." A previous alternative version of this scale (Testa et al., 2004) was validated by comparing individuals' stories of experiences of sexual coercion and assault with their responses to the SES. Agreement between self-report and individual stories was high. Further, modest associations were found between objective severity of acts and subjective trauma (Testa et al., 2004). However, as I adapted this measure in multiple ways for the purpose of this study, these validity estimates do not apply directly to the scale I used. Reliability for this scale in the current sample was poor at .51 for victimization, and .49 for perpetration. Reliabilities were run separately for each gender. Reliability was adequate for men's victimization at .63, but was poor for men's perpetration, women's victimization, and women's perpetration at .51, .50, and .43, respectively.

Stalking. In order to measure stalking perpetration and victimization, a modified version of the stalking victimization questionnaire (SVQ) from the National Intimate Partner and Sexual Violence Surveillance Program (NISVSS) was used (Appendix C; Fox, Nobles, & Fisher, 2011). I excluded the first two items of this seven-item scale because they pertained to stalking perpetrated through technology, which is measured in this study by the CARS (Watkins et al., 2016). Thus, I measured stalking victimization and perpetration with five items each for perpetration and victimization. Similar to the other aggression scales, I adapted the measure such

that participants reported on frequency of stalking in the past three months on a scale that ranges from 0 ("this never happened") to 6 ("more than 20 times in the past three months). The original scale inquired about lifetime prevalence of stalking victimization. Thus, scale scores can range from 0 to 30. Sample items include "I left my partner cards, flowers, or presents when I knew they didn't want me to" and "I approached my partner or showed up in places, such as their home, workplace, or school when they didn't want me to be there." Validity of this scale has not been widely investigated (Fox et al., 2011). However, in the current sample reliability was good at .82 for victimization, and .82 for perpetration.

Perpetration factors. Measures were also administered to explore several perpetration factors of interest. Specifically, I was interested in two technology-related perpetration factors: technology usage and technological disinhibition.

Technological disinhibition. Individual differences in the disinhibiting effects of communicating through technology was measured using the Revised Online Disinhibition Scale (RODS; Appendix D; Udris, 2016), which was developed based on Suler's (2005) theory of online disinhibition. The RODS contains two subscales: (1) benign disinhibition (3 items), and (2) toxic disinhibition (3 items). Question wording was altered so that the disinhibition applied to all technology use, rather than solely Internet usage. Example items include, "Through technology it is easier to talk openly about my worries or troubles" (benign disinhibition) and "Through technology it is easier to blame or criticize someone without fear of revenge or repercussions" (toxic disinhibition). For each item, respondents report the extent to which they agree with a statement on a 5-point scale ranging from "Fully disagree" to "Fully agree." This scale is scored ranging from 0 to 4 for each item, meaning total scale scores can range from 0 to 24. For subscales, each scale is totaled to obtain the subscale score. Thus, scores for subscales

can range from 0 to 12. Validity has not been widely investigated, although toxic disinhibition has been shown to be a predictor of online deviance in Japanese high school students (Udris, 2016). Reliability in the current sample was acceptable at .79.

Technology use. To measure technology use, I used a portion of the Media and Technology Usage and Attitudes Scale (MTUAS; Appendix E; Rosen, Whaling, Carrier, Cheever, & Rokkum, 2013). The original MTUAS contains both technology usage and attitudes subscales, of which participants in the present study responded to technology usage subscales only. The original technology usage scale contains 44 items and 11 subscales, of which I used 9 subscales (online friendships and Facebook friendships were excluded since these subscales did not measure amount of usage, but rather number of friends). I added several items in order to differentiate between passive use of technology (e.g., reading news stories, videos, or social media) and active use of technology (e.g., commenting on news stories, videos, or social media) and to include items that measure pornography viewing. Thus, the scale administered to participants contained 50 items and 9 subscales: (1) smartphone usage (12 items), (2) general social media usage (10 items), (3) Internet searching (6 items), (4) e-mailing (4 items), (5) media sharing (8 items), (6) text messaging (3 items), (7) video gaming (3 items), (8) phone calling (2 items), and (9) TV viewing (2 items). Respondents are prompted to supply the frequency with which they engage in several technology-related behaviors, for example "send and receive text messages on a mobile phone" and "post status updates on a social network." Respondents indicate the frequency with which they engage in behaviors on a scale that ranges from 0 ("Never") to 9 ("All the time"). Subscale scores are calculated by adding responses to each item on the subscale, and a total scale score is computed by summing responses to all the items, with higher scores indicating higher levels of technology use. Thus, possible subscale scores differ

based on the number of items, and range from 0 to 9 multiplied by the number of items. Total scale scores range from 0 to 450. The MTUAS was developed on a sample of adults from the United States. In the current sample, a full-scale score for technology usage was used, which had an excellent reliability of .93. Validity was established by correlating responses to the MTUAS with self-reported hours spent doing certain activities via technology. The MTUAS is also correlated with a measure of technology-related anxiety (Rosen et al., 2013).

Victim impacts. A variety of measures were used to explore potential victim impacts of tIPV victimization. These included measures of depression, perceived stress, alcohol use, fear of partner, relationship satisfaction, quality of life, social support, and post-traumatic stress symptoms.

Depression. Depression levels were also measured as a potential victim impact. The Center for Epidemiologic Studies Depression Scale (CES-D; Appendix F; Radloff, 1977) is a 20-item scale with four factors: (1) depressed affect, (2) positive affect, (3) somatic activity, and (4) interpersonal. Example items include "I felt hopeful about the future" (positive affect) and "My sleep was restless" (somatic activity). Participants respond with the frequency they have felt or behaved as the questions specify between 0 ("rarely or none of the time [less than one day]") and 3 ("most or all of the time [5-7 days]"). In scoring, positive affect items are reversed such that low scores are switched to indicate high levels of positive affect, and high scores are switched to indicate low levels of positive affect. To get a total depression score, all items are then summed together. Thus, scores on depressive symptoms can range from 0 to 60. In the current study, the reliability of this scale was excellent at .92. Validity of the CES-D has been shown in several ways. It is able to discriminate between psychiatric inpatient and general population samples, and is also correlated with reports of negative life events (Radloff, 1977).

Perceived stress. Self-reported levels of perceived stress were obtained through the Perceived Stress Scale (PSS; Appendix G; Cohen, Kamarck, & Mermelstein, 1983). The PSS is a single-factor measure with 14 items designed to measure recent stress levels. Example items include, "In the last month, how often have you found that you could not cope with all the things that you had to do?" and "In the last month, how often have you dealt successfully with irritating life hassles?" Respondents choose the frequency with which these feelings and thoughts occur on a scale of 0 ("never") to 4 ("very often"). Several items are re-coded for analysis such that higher scores reflect higher levels of perceived stress. To obtain the total amount of perceived stress, items are totaled together, and scores can range from 0 to 56. In the current sample, the reliability was good at .83. This scale evidences convergent validity as it correlates with the number of life events in a person's life, as well as perception of those events. The PSS is also shown to be predictive of symptomatology, and shows divergent validity from the CES-D, suggesting the two measure different constructs (Cohen et al., 1983).

Alcohol use. To measure potential hazardous or harmful alcohol consumption, participants completed the Alcohol Use Disorders Identification Test (AUDIT; Appendix H; Saunders, Aasland, Babor, Fuente, & Grant, 1993). The AUDIT contains 10 questions that measure drinking behaviors, adverse psychological reactions to drinking, alcohol-related problems, and alcohol consumption. Example items include "How often during the last year have you found that you were not able to stop drinking once you had started?" and "Have you or someone else been injured as the result of your drinking?" Each question is scored on a range from 0 to 4, based on frequencies and occurrences of behavior. Total scores on the AUDIT are computed by adding up all items, and thus scores can range from 0 to 40, with higher scores indicating greater amounts of alcohol and hazardous drinking problems. A clinical cutoff score

of 8 is used to identify high risk of hazardous or harmful alcohol use. In the current sample, the reliability of the AUDIT was good at .87. The AUDIT has been shown to discriminate adequately between individuals with alcohol-related problems and non-drinkers (Saunders et al., 1993). AUDIT scores show convergent validity with other common self-report and biochemical measures of excessive drinking (Allen et al., 1997).

Fear of partner. Another potential victim impact is the fear one has of their partner. The Fear of Partner Scale (FPS; Appendix I; O'Leary, Foran, & Cohen, 2013) was used to measure this construct. The original scale has five subscales, although for the purposes of this study, one subscale (fear of therapy) was excluded as it was not relevant to the current sample. The remaining four subscales are: (1) fear of psychological aggression (5 items), (2) fear of physical aggression (4 items), (3) fear of sexual aggression (5 items), and (4) fear of speaking (5 items). Respondents indicate to what extent they are afraid of their partner perpetrating specific behaviors against them on a scale of 1 ("not at all worried/afraid") to 7 ("extremely worried/afraid"). Example items include, "I am worried/afraid that my partner will control whom I socialize with" (fear of psychological aggression), "I am worried/afraid to stand up for myself to my partner" (fear of speaking) and "I am worried/afraid that my partner will kick me" (fear of physical aggression). Total scores can range from 19 to 133. In the current study, this full-scale score had an excellent reliability of .90. The FPS showed convergent validity with measures of psychological and physical IPV as well as with symptoms of depression and relationship distress (O'Leary et al., 2013).

Relationship satisfaction. To measure relationship satisfaction, participants completed the Couples Satisfaction Index (CSI; Appendix M; Funk & Rogge, 2007). I used the four-item version of this scale, which was created from the full scale by identifying the four items that

provided the largest amount of information when assessing relationship satisfaction (Funk & Rogge, 2007). Example items include "I have a warm and comfortable relationship with my partner" and "In general, how satisfied are you with your relationship?" Three of the four questions are responded to on a scale of 0 to 5, and one of the questions is responded to on a scale of 0 to 6. Thus, total scale scores can range from 0 to 21, with higher scores indicating higher relationship satisfaction. In the current sample, reliability of this scale was good at .85. The CSI also demonstrates convergent validity with multiple measures of relationship satisfaction (Funk & Rogge, 2007).

Quality of life. In order to measure quality of life, I used the World Health Organization Brief Quality of Life Assessment (WHOQOL-BREF; Appendix K; The WHOQOL Group, 1998). The WHOQOL-BREF has 26 items and assesses quality of life in four domains: (1) physical (7 items), (2) psychological (6 items), (3) social relationships (3 items), and (4) environment (8 items). Two items assess general quality of life. Example items include "Do you have enough energy for everyday life?" (physical), "How satisfied are you with the support you get from your friends?" (social relationships), and "How satisfied are you with yourself?" (psychological). Respondents rate the extent to which a statement is true of themselves on a scale of 1 to 5. Scores for each domain are calculated by multiplying the mean of items in each scale by 4, and thus scores on each domain can range from 4 to 20, with higher scores indicating higher quality of life. A total scale score is computed by summing together all the items. In the current sample, the reliability of this total score was excellent at .90. The WHOQOL-BREF is able to distinguish between ill and well respondents, and correlates highly with the WHOQOL-100, which has demonstrated criterion validity (WHOQOL, 1998).

Social support. To measure social support outside of romantic relationships, I used the Social Support Appraisals Scale (SS-A; Appendix L; Vaux, Phillips, Holly, Thomson, Williams, & Stewart, 1986). This measure consists of 23 items that measure an individual's beliefs that he or she is loved by, esteemed, and involved with family and friends. Example items include "My family cares for me very much" and "My friends and I have done a lot for one another." Each item is responded to on a scale from 0 ("Strongly disagree") to 3 ("Strongly agree"). A full scale score is calculated, and can range from 0 to 69. Several items are re-coded such that high scores reflect high perceptions of social support from friends and family, and low scores reflect low perceptions of social support from friends and family. In the current sample, reliability of this scale was excellent at .90. he SS-A also correlates with other measures of social support, and shows small to moderate correlations with variables such as depression, size of relational network, and supportive behaviors (Vaux et al., 1986).

Post-traumatic stress symptoms. To measure post-traumatic stress symptoms, I used the PTSD Checklist for DSM-5 (PCL-5; Appendix M; Weathers, Litz, Keane, Palmieri, Marx, & Schnurr, 2013). This measure consists of 20 items that assess post-traumatic stress disorder (PTSD) symptoms. Participants respond how often they were bothered by various symptoms in the past month on a scale ranging from 0 ("not at all") to 4 ("extremely"). Thus, total scores ranged from 0 to 80, with higher total scores indicating higher levels of post-traumatic stress symptoms. Example items include "Trouble remembering parts of the stressful experience?" and "Feeling very upset when something reminded you of the stressful experience?" In the current sample, reliability of this scale was excellent at .94. The PCL-5 correlates highly with other measures of PTSD symptoms, and shows discriminant validity from other related constructs such as depression, antisocial personality features, and mania (Blevins et al., 2015).

Demographic Information. Finally, respondents completed a brief demographic questionnaire (Appendix N). This questionnaire includes questions about age, gender, sexual orientation, education, occupational status, race and ethnicity, current living situation, citizenship, parental income, length of current relationship, and whether or not the individual met their current partner through technology.

Data Analysis

Power. In my regression equation with the greatest number of predictors, the calculated sample sizes needed to detect small (f^2 = .02), medium (f^2 = .15) and large (f^2 = .35) effects with .80 power are 684, 97, and 46, respectively. Therefore, the current sample likely does not have enough power to detect small effects, but does have sufficient power to detect medium and large effects. When the sample is split by gender, the sample size for women is sufficient to detect medium and large effects, but the sample size for men is sufficient only to detect large effects.

Data cleaning. The first aspect of data cleaning I considered was missing data. For data-sets such as the current one, which is cross-sectional, and where the primary missing data is at the item-level, it is recommended to visualize the extent of missing data to determine whether missing data treatment is warranted (McKnight & McKnight, 2013). Such a visualization was created using the "Amelia" package in R Studio (Honaker, King, & Blackwell, 2011). This visualization demonstrated a random pattern of missing data (i.e., there were no specific questions that large numbers of participants failed to answer), as well as an overall small amount of missing data (less than 1%). For participants missing small numbers of items on particular scales, their total score on the scale was calculated using the remaining items on the scale (i.e., taking the average of the items the participant answered, and multiplying by the total number of questions on the scale). Specifically, for scales with less than ten questions, those participants

who were missing only a single item had a total score calculated. For scales with more than ten questions, those missing less than 10% of the questions had a total score calculated. Any participants missing more than this amount of data did not receive a total score, and thus were not included in any analysis requiring that total score.

Next, full scale scores were analyzed for outliers. Outliers were defined as any values that were greater than three standard deviations away from the mean (Tabachnick & Fidell, 2001). If any outliers were identified, they were Winsorized to the next highest value using SPSS (Reifman & Keyton, 2010). Thus, outlying scores were not excluded from analysis, but their scale score was changed to ensure that an extreme result would not be responsible for any effects discovered (Reifman & Keyton, 2010). Outliers were detected and Winsorized in all key variables except the Revised Online Disinhibition Scale, which did not have any outliers. Several variables demonstrated high levels of skewness, including technological victimization and perpetration, in-person physical and psychological victimization and perpetration, sexual victimization and perpetration, stalking victimization and perpetration, post-traumatic stress symptoms, and fear of partner. This skewness was expected, as IPV is a relatively rare behavior, with approximately 8% of Canadian individuals reporting physical IPV victimization, and 2% of Canadian individuals reporting sexual IPV victimization (Romans, Forte, Cohen, Du Mont, & Hyman, 2007). While psychological IPV victimization is more common, with evidence that essentially all individuals experience at least one instance of psychological IPV victimization, this distribution is still traditionally skewed, as most individuals in non-clinical samples experience low levels of psychological IPV victimization, with only a few individuals experiencing higher levels (Straus et al., 1996). Post-traumatic stress disorder is also a fairly rare disorder, with epidemiological estimates estimating a Canadian prevalence rate of 9.2% (Van

Ameringen, Mancini, Patterson, & Boyle, 2008). Thus, the skewness of these variables is in line with the established knowledge about the constructs measured.

RQ1: Victim impacts. In order to determine whether technological aggression victimization predicts victim impacts above those experienced as a result of in-person aggression, hierarchical regression analyses were conducted (see Figure 1). These regressions were conducted using the "stats" package in R Studio (R Core Team, 2017). Regression tables were created using the "apaTables" package in R Studio (Stanley, 2017). Predictors were mean-centered before performing the regressions. For each victim impact, the first model included experiences of in-person IPV, as measured by the CTS2 (Straus et al., 1996), the SES (Koss & Oros, 1982), and the stalking victimization questionnaire (Fox et al., 2011), as well as gender. The second model added the scores on the CARS (Watkins et al., 2016), which measures tIPV. The final model additionally included the interaction between gender and the CARS to assess whether gender moderated the impact of tIPV. If a significant moderation effect was found, I performed separate follow-up regressions for men and women participants to investigate the nature of the moderation effect. Because the victim impacts I measured are intended to assess several distinct domains, I ran a separate multiple regression for each victim impact, and applied a Bonferroni correction to the analyses in order to account for inflated alpha. Because eight different victim impacts are being explored, the threshold for significance of the models is .05 divided by 8, or .00625. Victim impacts explored are perceived stress, depression, fear of partner, quality of life, alcohol use, relationship satisfaction, social support, and post-traumatic stress symptoms.

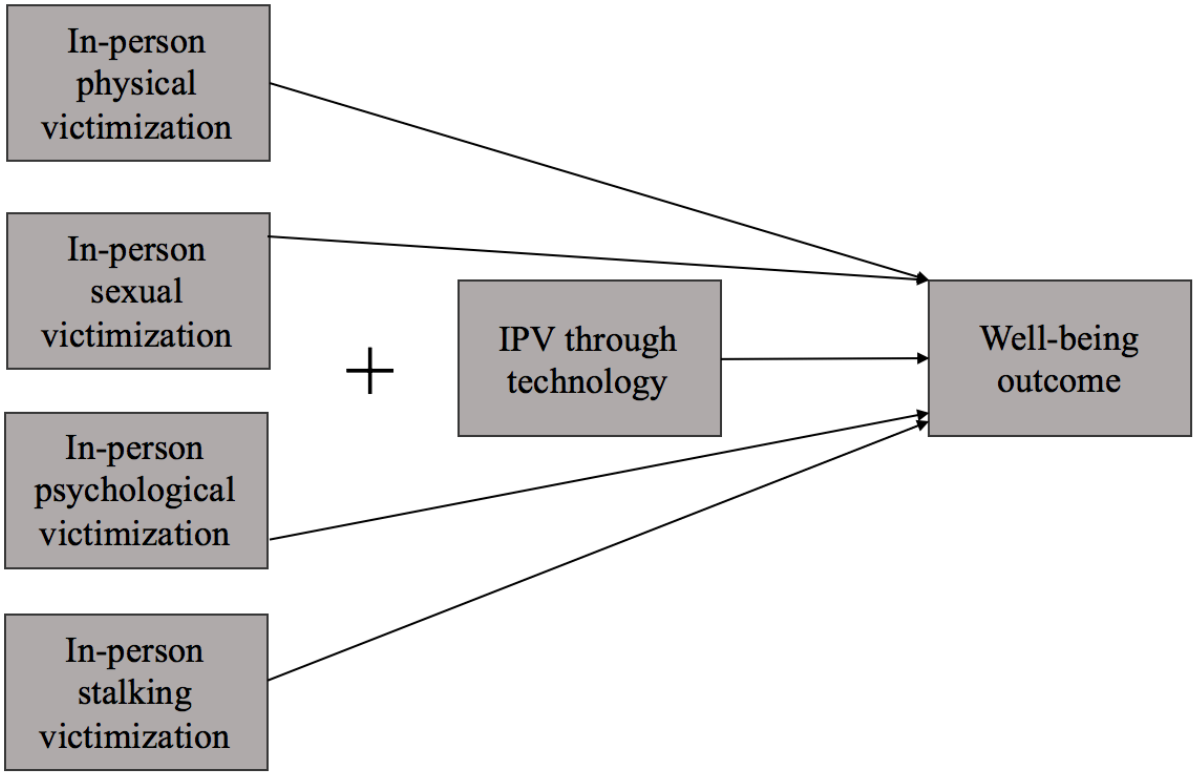

Figure 1. Proposed analysis of victim impacts. In-person IPV victimization will be entered in step 1, and tIPV victimization will be entered in step 2. A separate multiple regression will be run for each victim impact.

RQ2: Technology-related perpetration factors. In order to explore how technology-related variables influence perpetration, I conducted a moderation analysis. This analysis was conducted using the "stats" package in R Studio (R Core Team, 2017). Regression tables were created using the "apaTables" package in R Studio (Stanley, 2017). Specifically, I tested whether technology usage is related to perpetration of tIPV, and whether this association is moderated by participants' levels of self-reported online disinhibition (see Figure 2). Predictors were mean-centered before performing the regressions. Thus, the first model consisted of participant self-reports of technology usage, as measured by the MTUAS (Rosen et al., 2013) and self-reports of

online disinhibition, as measured by the RODS (Udris, 2016). In the second model, I added the interaction between technology usage and online disinhibition in order to determine if this interaction significantly improved the fit of the model.

While the primary aim of this research question is to determine how technological factors may interact to predict tIPV perpetration, I am also interested in whether in-person perpetration or technology-related variables are a stronger predictor of tIPV perpetration. Thus, a follow-up regression analysis was performed including a single set of predictors which incorporated various forms of in-person perpetration (i.e., psychological, physical, sexual, stalking) and technology factors (i.e., technology usage and online disinhibition). The beta values for each predictor were compared to determine which predictors were most strongly related to the perpetration of tIPV. I predict disinhibition will act as a moderator of the relationship between technology usage and tIPV perpetration. Two separate moderation analyses will be computed: one using toxic online disinhibition as the moderator, and one using benign online disinhibition.

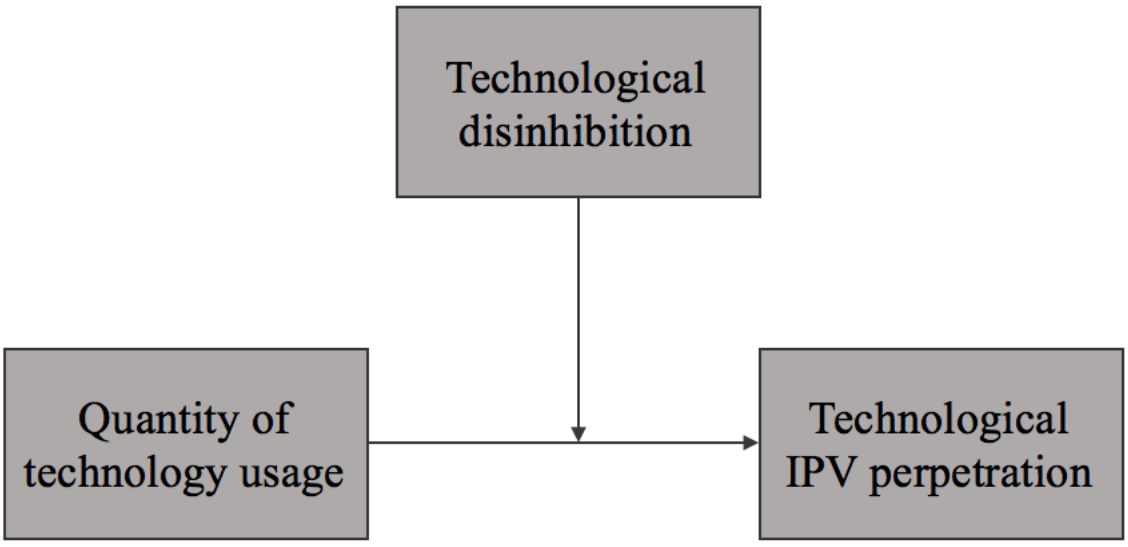

Figure 2. Proposed model for the interaction of technology factors.

Results

Preliminary Analyses

First, several descriptive analyses were undertaken to determine the amount of perpetration and victimization of both in-person and tIPV. Table 3 depicts the percentage endorsement for each item on the CARS for both victimization and perpetration. There is clearly a range of endorsements, although the highly endorsed items do not fall into one form of tIPV victimization or perpetration (i.e., cyberstalking, psychological tIPV, or sexual tIPV). Of the three most commonly endorsed items for both victimization and perpetration, two belonged to the original cyberstalking scale of the CARS (keeping tabs on one's partner through social media and checking one's partner's phone to see who they were talking to), and one to the original psychological tIPV subscale of the CARS (intentionally ignoring partner's phone calls and texts). The items that comprised the original sexual tIPV subscale of the CARS, as a group, were the least endorsed, with several items being endorsed by less than 3% of participants, and none being endorsed by over 10% of participants.

I also determined the relative percentages of participants who perpetrated and were victimized by IPV through technology only, in-person only, through both technology and in-person, or through neither medium. For perpetration, of participants who supplied sufficient data, 12.2% perpetrated IPV in-person only (i.e., physical, psychological, sexual, or stalking in-person IPV), and 10% perpetrated IPV through technology only. 67.8% perpetrated IPV through both technology and in-person, and 10% reported no perpetration through either medium. For victimization, of participants who supplied sufficient data, 17.6% were victimized by IPV in-person only, and 8.2% were victimized through technology only. The majority (62.5%) were victimized by IPV both in-person and through technology, and 11.6% reported no victimization

through either medium. Thus, while it appears there are subsets of individuals who report both victimization and perpetration through only one medium, the majority of participants experienced IPV through both.

Table 3

Percentage Endorsement for the CARS Items

Item & Subscale	% endorsement		
Psychological tIPV victimization	Total	Male	Female
My partner used information posted on social media to put me down or insult me.	9.8	16.2	7.5
My partner shared private or embarrassing information about me via text or social media without my permission.	7.9	10.8	6.9
My partner sent threatening or harassing messages to me via text or social media.	4.0	5.4	3.5
My partner wrote or posted content on social media that they knew would hurt my feelings.	3.3	5.4	2.5
My partner intentionally ignored my phone calls or text messages in order to hurt my feelings.	29.2	29.7	29.1
Cyberstalking victimization			
My partner checked my e-mail account to see who I was talking to or e-mailing without my permission.	4.0	5.4	3.4
My partner kept tabs on my whereabouts using social media.	33.6	39.2	31.5
My partner checked my phone to see who I was talking to or texting without my permission.	29.5	36.5	27.0
My partner checked or tracked my Internet activity without my permission.	7.7	11.4	6.4
My partner used my social media account to view my activity without my permission.	13.1	16.2	12.0
My partner sent repeated online messages or texts asking about my location or activities.	35.1	36.5	34.7
My partner used GPS technology to track my location without my permission.	5.1	8.2	3.9
My partner took information or images from my phone, e-mail, or social media profile without my permission.	5.1	4.1	5.4
Sexual tIPV victimization			
My partner asked me online for sexual information about myself when I did not want to tell.	2.9	2.7	2.9
My partner shared intimate or sexual information about me via text or social media without my permission.	5.8	8.1	4.9
My partner posted a sexually suggestive message or picture to my online profile that I did not want.	1.8	4.2	1.0
My partner pressured me to send sexual or naked photos of	8.8	7.1	9.3

myself to them.			
My partner sent an explicit or sexual photo of themselves when they knew I did not want to see it.	1.8	4.1	1.0
My partner tried to make me talk about sex online when I did not want to.	4.7	4.1	4.9
Psychological tIPV perpetration	Total	Male	Female
I used information posted on social media to put down or insult my partner.	7.2	8.1	6.9
I shared private or embarrassing information about my partner via text or social media without their permission.	12.9	14.9	12.3
I sent threatening or harassing messages to my partner via text or social media.	3.3	7.0	2.0
I wrote or posted content on social media that I knew would hurt my partner's feelings.	4.7	2.7	5.5
I intentionally ignored my partner's phone calls or text messages to hurt my partner's feelings.	41.0	33.8	43.6
Cyberstalking perpetration			
I checked my partner's e-mail account to see who they were talking to or e-mailing without their permission.	12.6	9.5	13.7
I kept tabs on the whereabouts of my partner using social media.	39.3	43.8	37.6
I checked my partner's phone to see who they were talking to or texting without my partner's permission.	42.4	52.7	38.7
I checked or tracked my partner's Internet activity without their permission.	10.9	7.0	12.3
I used my partner's social media account to view their activity without my partner's permission.	14.9	14.9	14.9
I sent repeated online messages or texts asking about my partner's location or activities.	30.0	27.0	31.0
I used GPS technology to track my partner's location without my partner's permission.	6.2	9.5	5.0
I took information or images from my partner's phone, e-mail, or social media profile without their permission.	5.4	4.1	5.9
Sexual tIPV perpetration			
I asked my partner online for sexual information about themselves when my partner did not want to tell.	2.2	2.7	2.0
I shared intimate or sexual information about a partner via text or social media without my partner's permission.	8.3	10.8	7.4
I posted a sexually suggestive message or picture to my partner's online profile that they did not want.	.7	1.4	.5
I pressured my partner to send sexual or naked photos of themselves to me.	4.4	11.3	2.0
I sent an explicit or sexual photo of myself to my partner when I knew my partner did not want to see it.	1.8	2.7	1.5
I tried to make my partner talk about sex online when they did not want to.	2.5	4.1	2.0

RQ1: Victim Impacts

Preliminary analyses. The mean scores, standard deviations, range, *t*-test of gender differences in mean scores, and α coefficients for the key variables in research question 1 can be found in Table 4. Men reported greater physical victimization, alcohol use, and fear of partner than women, and women reported higher relationship satisfaction than men. Correlations between the various forms of victimization by one's partner and the victim impacts explored can be found in Table 5. For women, tIPV victimization was correlated with all forms of partner victimization as well as all victim impacts that were evaluated in the current study. For men, tIPV victimization was correlated with all other forms of partner victimization, but was correlated only with alcohol use and fear of partner of the victim impacts evaluated.

Table 4

Scale Descriptive Statistics and Reliability for Research Question 1

	Mean	Standard deviation	Minimum	Maximum	*t*-test of gender differences	α
tIPV victimization[a]	4.71	6.38	0	26	1.76	.80
Physical victimization[b]	1.03	2.41	0	10	2.68**	.74
Psychological victimization[b]	3.57	4.47	0	18	1.73	.71
Sexual victimization[c]	1.70	2.23	0	9	-.64	.51
Stalking victimization[d]	.47	1.28	0	7	-.46	.82
Depression[e]	16.42	10.34	1	46	.65	.92
Perceived Stress[f]	26.92	6.84	9	46	-1.31	.83
Alcohol Use[g]	6.90	4.91	0	22	2.35*	.87

Fear of Partner[h]	25.96	9.32	19	58	4.61**	.90
Relationship Satisfaction[i]	15.50	3.88	4	21	-2.14*	.85
Quality of Life[j]	102.37	11.47	67	126	-1.17	.90
Perceived Social Support[k]	52.60	8.14	29	69	-1.76	.90
Post-Traumatic Stress[l]	16.74	13.85	0	59	.69	.94

Note. * indicates $p < .05$; ** indicates $p < .01$
tIPV = technological intimate partner violence
[a]Cyber Aggression in Relationships Scale
[b] Conflict Tactics Scale Revised
[c]Sexual Experiences Survey
[d]Stalking Victimization Questionnaire
[e]Center for Epidemiological Studies Depression Scale
[f]Perceived Stress Scale
[g]Alcohol Use Disorders Identification Test
[h]Fear of Partner scale
[i]Couples Satisfaction Index
[j]World Health Organization Quality of Life Scale, Brief
[k]Social Support Appraisals
[l]PTSD Checklist for DSM-5

Table 5

Correlations among Key Variables in Research Question 1

	1	2	3	4	5	6	7	8	9	10	11	12	13
1.tIPV victimization[a]		.62**	.60**	.44**	.34**	-.06	-.12	.33**	.37**	-.08	.11	-.06	.07
2.Physical victimization[b]	.37**		.68**	.30**	.02	.16	.15	.16	.53**	-.21	-.05	-.15	.20
3.Psychological victimization[b]	.59**	.50**		.45**	.16	.10	.09	.09	.32**	-.28**	.07	-.14	.09
4.Sexual victimization[c]	.36**	.28**	.31**		.33**	.22	.14	.21	.27	-.22	.01	-.08	.23*
5.Stalking victimization[d]	.33**	.16*	.36**	.32**		-.04	-.10	.17	.05	-.10	.09	.08	.05
6.Depression[e]	.23**	.22**	.26**	.35**	.07		.70**	.15	.31**	-.30**	-.67**	-.39**	.74**
7.Perceived Stress[f]	.22**	.24**	.24**	.28**	.12	.78**		.11	.30**	-.37**	-.61**	-.45**	.59**
8.Alcohol use[g]	.28**	.01	.19**	.16*	.09	.29**	.27**		.079	.038	.01	.10	.33**
9.Fear of partner[h]	.56**	.37**	.56**	.43**	.35**	.33**	.28**	.11		-.49**	-.26**	-.25**	.40**
10.Relationship satisfaction[i]	-.36**	-.13	-.41**	-.25**	-.27**	-.33**	-.32**	-.11	-.51**		.41**	.46**	-.30**
11.Quality of life[j]	-.22**	-.23**	-.30**	-.33**	-.14*	-.67**	-.67**	-.23**	-.36**	.45**		.54**	-.50**
12.Social support[k]	-.17**	-.20**	-.13*	-.20**	-.03	-.52**	-.49**	-.14	-.31**	.32**	.62**		-.15
13.Post-traumatic stress[l]	.23**	.23**	.32**	.40**	.24**	.76**	.64**	.31**	.43**	-.25**	-.64**	-.44**	

Note. Males above the diagonal, females below the diagonal. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence.

[a]Cyber Aggression in Relationships Scale

[b] Conflict Tactics Scale Revised

[c]Sexual Experiences Survey

[d]Stalking Victimization Questionnaire
[e]Center for Epidemiological Studies Depression Scale
[f]Perceived Stress Scale
[g]Alcohol Use Disorders Identification Test
[h]Fear of Partner scale
[i]Couples Satisfaction Index
[j]World Health Organization Quality of Life Scale, Brief
[k]Social Support Appraisals
[l]PTSD Checklist for DSM-5

Depression. In order to investigate whether tIPV victimization uniquely predicted depression when controlling for in-person victimization, I ran a hierarchical regression analysis (see Table 6). In the first regression model, which included various forms of in-person aggression, R^2 differed significantly from 0, $R^2 = .10$, $F(5, 261) = 5.97$, $p < .001$. Sexual victimization was a significant predictor of depression, $\beta = .26$, $p < .001$. The second regression model included tIPV victimization along with in-person victimization, and did not significantly improve model fit, $\Delta R^2 < .01$, $F(1, 260) = .12$, $p = .73$. tIPV victimization was not a significant predictor within this model, $\beta = -.03$, $p = .73$. The third regression model included the interaction between gender and tIPV victimization, and significantly improved model fit, $\Delta R^2 = .02$, $F(1, 259) = 5.98$, $p = .02$. With all of the variables in the equation in this third step, the model as a whole significantly predicted depression, $R^2 = .12$, $F(7, 259) = 5.20$, $p < .001$.

Due to the significant interaction between gender and tIPV victimization, follow-up hierarchical regression analyses were performed to determine differences in predictors between male and female participants. For men (see Table 7), the addition of tIPV victimization into the model did not significantly improve model fit, $\Delta R^2 = .05$, $F(1, 65) = 3.63$, $p = .06$, and tIPV victimization was not a unique predictor of depression, $\beta = -.35$, $p = .06$. For female participants (see Table 8), the addition of tIPV victimization into the model did not significantly improve model fit, $\Delta R^2 < .01$, $F(1, 191) = .73$, $p = .39$. tIPV victimization was not a unique predictor of depression among women, $\beta = .08$, $p = .39$. However, sexual victimization was, $\beta = .27$, $p < .001$. This suggests that tIPV victimization is not related to depression among men or women.

Table 6

Regression results using Depression as the criterion

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Stalking victimization	-0.77	-0.10	.01		
Sexual victimization	1.12**	0.26	.06		
Physical victimization	0.39	0.09	.01		
Psychological victimization	0.16	0.07	.00		
Gender	0.20	0.01	.00		
				R^2 = .103** 95% CI[.03,.16]	
Step 2					
Stalking victimization	-0.72	-0.09	.01		
Sexual victimization	1.14**	0.27	.06		
Physical victimization	0.42	0.10	.01		
Psychological victimization	0.18	0.08	.00		
Gender	0.18	0.01	.00		
tIPV victimization	-0.04	-0.03	.00		
				R^2 = .103** 95% CI[.03,.16]	ΔR^2 < .01 95% CI[-.00, .01]
Step 3					
Stalking victimization	-0.74	-0.10	.01		
Sexual victimization	1.15**	0.27	.06		
Physical victimization	0.56	0.13	.01		
Psychological victimization	0.15	0.07	.00		
Gender	-0.05	-0.00	.00		

tIPV victimization	-0.37*	-0.24	.01		
Gender by tIPV victimization interaction	0.47*	0.25	.02		
				R^2 = .123** 95% CI[.04,.18]	ΔR^2 = .02* 95% CI[-.01, .05]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Table 7

Regression results using Depression as the criterion for men

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Stalking victimization	-0.32	-0.04	.00		
Sexual victimization	0.79	0.20	.03		
Physical victimization	0.30	0.10	.01		
Psychological victimization	-0.04	-0.02	.00		
				R^2 = .051 95% CI[.00,.13]	
Step 2					
Stalking victimization	0.54	0.07	.00		
Sexual victimization	0.91	0.23	.04		
Physical victimization	0.68	0.22	.02		
Psychological victimization	0.18	0.09	.00		
tIPV victimization	-0.46	-0.35	.05		
				R^2 = .101 95% CI[.00,.19]	ΔR^2 = .05 95% CI[-.05, .15]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Table 8

Regression results using Depression as the criterion for women

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Stalking victimization	-1.04	-0.13	.01		
Sexual victimization	1.24**	0.28	.07		
Physical victimization	0.62	0.12	.01		
Psychological victimization	0.25	0.11	.01		
				R^2 = .134** 95% CI[.04,.21]	
Step 2					
Stalking victimization	-1.17	-0.15	.02		
Sexual victimization	1.20**	0.27	.06		
Physical victimization	0.58	0.11	.01		
Psychological victimization	0.18	0.08	.00		
tIPV victimization	0.12	0.08	.00		
				R^2 = .137** 95% CI[.04,.21]	ΔR^2 < .01 95% CI[-.01, .02]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Perceived stress. I performed hierarchical regression analyses to determine if tIPV victimization uniquely predicted perceived stress (see Table 9). Here again, the first regression model included various forms of in-person victimization, and R^2 differed significantly from 0, R^2 = .08, $F(5, 260) = 4.54$, $p < .001$. Sexual IPV victimization was a significant predictor of perceived stress, $\beta = .21$, $p = .002$. The second regression model additionally included tIPV victimization, and did not significantly improve model fit, $\Delta R^2 < .01$, $F(1, 259) = .42$, $p = .52$. tIPV victimization was not a significant predictor of perceived stress in this model, $\beta = -.05$, $p = .52$. The third regression model, which added the interaction between tIPV victimization and gender, significantly improved model fit, $\Delta R^2 = .03$, $F(1, 258) = 7.85$, $p = .005$. When all of the variables were included in this third model, the model was significant, $R^2 = .109$, $F(7, 258) = 4.50$, $p = < .001$.

Since the interaction between gender and tIPV victimization was significant, follow-up hierarchical regressions were performed to explore how the association between tIPV victimization and perceived stress differed between men and women. For men (see Table 10), in the first model, stalking victimization uniquely predicted perceived stress, $\beta = -.29$, $p = .02$. The addition of tIPV victimization into the model did not improve model fit, $\Delta R^2 = .04$, $F(1, 64) = 3.02$, $p = .09$. tIPV victimization did not uniquely predict perceived stress for men, $\beta = -.32$, $p = .09$. Among women (see Table 11), sexual victimization uniquely predicted perceived stress, $\beta = .21$, $p = .005$. The addition of tIPV victimization also did not improve fit, $\Delta R^2 < .01$, $F(1, 191) = .44$, $p = .51$. tIPV victimization was not a unique predictor of perceived stress for women, $\beta = .06$, $p = .51$. This suggests that tIPV victimization was not a unique predictor of perceived stress for men or women.

Table 9

Regression results using Perceived Stress as the criterion

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Stalking victimization	-0.56	-0.11	.01		
Sexual victimization	0.60**	0.21	.04		
Physical victimization	0.18	0.06	.00		
Psychological victimization	0.14	0.09	.01		
Gender	1.75	0.11	.01		
				R^2 = .080** 95% CI[.02,.13]	
Step 2					
Stalking victimization	-0.49	-0.09	.01		
Sexual victimization	0.62**	0.21	.04		
Physical victimization	0.21	0.07	.00		
Psychological victimization	0.17	0.11	.01		
Gender	1.72	0.11	.01		
tIPV victimization	-0.06	-0.05	.00		
				R^2 = .082** 95% CI[.01,.13]	ΔR^2 < .01 95% CI[-.01, .01]
Step 3					
Stalking victimization	-0.51	-0.10	.01		
Sexual victimization	0.63**	0.22	.04		
Physical victimization	0.32	0.11	.01		
Psychological victimization	0.15	0.10	.00		
Gender	1.54	0.10	.01		
tIPV victimization	-0.31*	-0.30	.02		
Gender by	0.37**	0.29	.03		

tIPV victimization interaction				
		R^2 = .109**	ΔR^2 = .03**	
		95% CI[.03,.16]	95% CI[-.01, .06]	

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Table 10

Regression results using Perceived Stress as the criterion for men

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Stalking victimization	-1.59*	-0.29	.08		
Sexual victimization	0.56	0.19	.03		
Physical victimization	0.16	0.07	.00		
Psychological victimization	0.06	0.04	.00		
				R^2 = .103 95% CI[.00,.21]	
Step 2					
Stalking victimization	-1.03	-0.19	.03		
Sexual victimization	0.64	0.22	.04		
Physical victimization	0.41	0.18	.02		
Psychological victimization	0.20	0.13	.01		
tIPV victimization	-0.30	-0.32	.04		
				R^2 = .144 95% CI[.00,.25]	ΔR^2 = .04 95% CI[-.05, .13]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Table 11

Regression results using Perceived Stress as the criterion for women

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Stalking victimization	-0.21	-0.04	.00		
Sexual victimization	0.62**	0.21	.04		
Physical victimization	0.23	0.07	.00		
Psychological victimization	0.17	0.11	.01		
				R^2 = .083** 95% CI[.01,.15]	
Step 2					
Stalking victimization	-0.28	-0.05	.00		
Sexual victimization	0.60**	0.21	.04		
Physical victimization	0.21	0.06	.00		
Psychological victimization	0.13	0.09	.00		
tIPV victimization	0.07	0.06	.00		
				R^2 = .085** 95% CI[.01,.15]	ΔR^2 < .01 95% CI[-.01, .01]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Alcohol use. A hierarchical regression was also run to explore if tIPV victimization uniquely impacted alcohol use (see Table 12). In the first model, which contained the in-person victimization variables, R differed significantly from 0, R^2 = .055, $F(5, 258) = 2.99$, $p = .01$. Gender was a unique predictor of alcohol use, $\beta = -.14$, $p = .02$ such that men scored higher on alcohol use than women. Incorporating tIPV victimization in the second model significantly improved model fit, ΔR^2 = .08, $F(1, 257) = 24.64$, $p < .001$. tIPV victimization significantly predicted alcohol use in this model, $\beta = .39$, $p < .001$. Model fit was not improved by adding the interaction between gender and tIPV victimization in the final model, ΔR^2 < .01, $F(1, 256) = .42$, $p = .52$. When all of the variables were included in this third model, the model overall was significant, R^2 = .14, $F(7, 256) = 5.90$, $p < .001$. This suggests that tIPV victimization significantly predicts increased levels of alcohol use among both men and women.

Table 12

Regression results using Alcohol Use as the criterion

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Stalking victimization	-0.03	-0.01	.00		
Sexual victimization	0.29*	0.14	.02		
Physical victimization	-0.01	-0.01	.00		
Psychological victimization	0.11	0.10	.01		
Gender	-1.58*	-0.14	.02		
				R^2 = .055* 95% CI[.00,.10]	
Step 2					
Stalking victimization	-0.41	-0.10	.01		
Sexual victimization	0.20	0.09	.01		
Physical victimization	-0.18	-0.09	.00		
Psychological victimization	-0.06	-0.05	.00		
Gender	-1.39*	-0.12	.01		
tIPV victimization	0.30**	0.39	.08		
				R^2 = .137** 95% CI[.05,.20]	ΔR^2 = .08** 95% CI[.02, .14]
Step 3					
Stalking victimization	-0.41	-0.11	.01		
Sexual victimization	0.20	0.09	.01		
Physical victimization	-0.16	-0.08	.00		
Psychological victimization	-0.06	-0.06	.00		
Gender	-1.43*	-0.13	.02		
tIPV victimization	0.26**	0.34	.03		
Gender by	0.06	0.07	.00		

tIPV victimization interaction		
	R^2 = .139**	ΔR^2 < .01
	95% CI[.05,.20]	95% CI[-.01, .01]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Fear of partner. In order to determine if tIPV victimization uniquely impacted one's fear of their partner, I ran a hierarchical regression analysis (see Table 13). The first model contained in-person victimization variables, and the R^2 of this model differed significantly from 0, R^2 = .39, $F(5, 261) = 33.07$, $p < .001$. Sexual ($\beta = .22$, $p < .001$), physical ($\beta = .27$, $p < .001$), and psychological ($\beta = .24$, $p < .001$) in-person IPV victimization each uniquely predicted fear of partner. Adding tIPV victimization in the second model significantly improved model fit, ΔR^2 = .01, $F(1, 260) = 5.18$, $p = .02$. tIPV victimization uniquely predicted fear of partner, $\beta = .15$, p = .02. In the third model, adding the interaction between tIPV victimization and gender also significantly improved model fit, ΔR^2 = .01, $F(1, 259) = 3.89$, $p = .05$. When all of the variables were included in this third model, the model overall was significant, R^2 = .41, $F(7, 259)$ = 17.51, $p < .001$. Thus, it appears that tIPV victimization, as well as many other forms of in-person victimization (i.e., sexual, physical, and psychological) uniquely predicted fear of partner (see Table 13).

Since the interaction between gender and tIPV victimization was significant, follow-up hierarchical regressions were performed to explore how the association between tIPV victimization and fear of partner differed between men and women. Among men (see Table 14), the addition of tIPV victimization into the model did not improve model fit, ΔR^2 < .01, $F(1, 65)$ = .18, $p = .67$. TIPV victimization did not uniquely predict fear of partner for men, $\beta = .07$, p = .67. However, physical victimization did predict fear of partner for men, $\beta = .40$, $p = .01$. For women (see Table 15), the addition of tIPV victimization improved model fit, ΔR^2 = .03, $F(1, 191) = 8.66$, $p = .004$. tIPV victimization was a unique predictor of fear of partner for women above the effects of in-person IPV victimization alone, $\beta = .21$, $p = .004$. In this model, sexual (β = .27, $p < .001$), physical ($\beta = .17$, $p = .01$), and psychological ($\beta = .21$, $p = .003$) IPV

victimization also each uniquely predicted fear of partner. This suggests that tIPV victimization is uniquely related to fear of partner among women only.

Table 13

Regression results using Fear of Partner as the criterion

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Stalking victimization	0.19	0.03	.00		
Sexual victimization	0.91**	0.22	.04		
Physical victimization	1.11**	0.27	.05		
Psychological victimization	0.51**	0.24	.03		
Gender	-4.17**	-0.19	.03		
				R^2 = .388** 95% CI[.29,.46]	
Step 2					
Stalking victimization	-0.09	-0.01	.00		
Sexual victimization	0.84**	0.20	.03		
Physical victimization	0.99**	0.24	.04		
Psychological victimization	0.39**	0.18	.02		
Gender	-4.04**	-0.18	.03		
tIPV victimization	0.22*	0.15	.01		
				R^2 = .400** 95% CI[.30,.47]	ΔR^2 = .01* 95% CI[-.01, .03]
Step 3					
Stalking victimization	-0.11	-0.01	.00		
Sexual victimization	0.85**	0.21	.03		
Physical victimization	1.08**	0.27	.04		
Psychological victimization	0.37*	0.17	.02		
Gender	-4.19**	-0.19	.03		
tIPV victimization	0.02	0.01	.00		
Gender by	0.30*	0.17	.01		

tIPV victimization interaction		R^2 = .409** 95% CI[.31,.47]	ΔR^2 = .01* 95% CI[-.01, .03]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Table 14

Regression results using Fear of Partner as the criterion for men

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Stalking victimization	-0.97	-0.11	.01		
Sexual victimization	0.55	0.12	.01		
Physical victimization	1.57**	0.42	.10		
Psychological victimization	0.29	0.12	.01		
				R^2 = .310** 95% CI[.10,.43]	
Step 2					
Stalking victimization	-1.17	-0.13	.01		
Sexual victimization	0.52	0.11	.01		
Physical victimization	1.48*	0.40	.07		
Psychological victimization	0.24	0.10	.00		
tIPV victimization	0.11	0.07	.00		
				R^2 = .312** 95% CI[.09,.43]	ΔR^2 < .01 95% CI[-.02, .02]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Table 15

Regression results using Fear of Partner as the criterion for women

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Stalking victimization	0.65	0.10	.01		
Sexual victimization	1.09**	0.29	.07		
Physical victimization	0.80**	0.19	.03		
Psychological victimization	0.59**	0.30	.06		
				R^2 = .407** 95% CI[.29,.48]	
Step 2					
Stalking victimization	0.34	0.05	.00		
Sexual victimization	1.00**	0.27	.06		
Physical victimization	0.70*	0.17	.02		
Psychological victimization	0.42**	0.21	.03		
tIPV victimization	0.29**	0.21	.03		
				R^2 = .433** 95% CI[.32,.51]	ΔR^2 = .03** 95% CI[-.01, .06]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Relationship satisfaction. A hierarchical regression analysis was performed to determine if tIPV victimization predicted participants' relationship satisfaction (see Table 16). In the first model, which included the in-person victimization variables, R differed significantly from 0, R^2 = .15, $F(5, 261) = 9.35$, $p < .001$. In this model, psychological victimization was a unique predictor of relationship satisfaction, $\beta = -.35$, $p < .001$. The addition of tIPV victimization in the second model did not improve overall fit, $\Delta R^2 < .01$, $F(1, 260) = .01$, $p = .90$. tIPV victimization was not a unique predictor of relationship satisfaction, $\beta = -.01$, $p = .90$. The addition of the interaction between gender and tIPV victimization in the third model did improve model fit, ΔR^2 = .01, $F(1, 259) = 4.47$, $p = .04$. When all of the variables were included in this final model, the model was significant, $R^2 = .17$, $F(7, 259) = 7.38$, $p < .001$.

To further investigate the interaction between tIPV victimization and gender, follow-up hierarchical regressions were run separately for men and women. For men (see Table 17), the addition of tIPV victimization in the second model did not improve model fit, $\Delta R^2 = .02$, $F(1, 65) = 1.84$, $p = .18$. tIPV victimization was not a unique predictor of relationship satisfaction for men, $\beta = .25$, $p = .18$. For women (see Table 18), the addition of tIPV victimization in the second model also did not improve model fit, $\Delta R^2 = .01$, $F(1, 191) = 1.49$, $p = .22$. Here again, tIPV victimization was not a unique predictor of relationship satisfaction for women, $\beta = -.10$, $p = .22$. However, psychological IPV victimization was a unique predictor of relationship satisfaction for women, $\beta = -.35$, $p < .001$. Thus, it appears that relationship satisfaction was not uniquely predicted by tIPV victimization for either men or women.

Table 16

Regression results using Relationship Satisfaction as the criterion

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Stalking victimization	-0.10	-0.03	.00		
Sexual victimization	-0.17	-0.10	.01		
Physical victimization	0.14	0.08	.00		
Psychological victimization	-0.31**	-0.35	.08		
Gender	0.95	0.11	.01		
				R^2 = .152** 95% CI[.07,.22]	
Step 2					
Stalking victimization	-0.09	-0.03	.00		
Sexual victimization	-0.17	-0.10	.01		
Physical victimization	0.14	0.09	.00		
Psychological victimization	-0.30**	-0.35	.06		
Gender	0.95	0.11	.01		
tIPV victimization	-0.01	-0.01	.00		
				R^2 = .152** 95% CI[.06,.21]	ΔR^2 < .01 95% CI[-.00, .00]
Step 3					
Stalking victimization	-0.08	-0.03	.00		
Sexual victimization	-0.17	-0.10	.01		
Physical victimization	0.09	0.06	.00		
Psychological victimization	-0.29**	-0.34	.06		
Gender	1.03*	0.12	.01		
tIPV victimization	0.10	0.17	.01		
Gender by	-0.16*	-0.21	.01		

tIPV victimization interaction		R^2 = .166** 95% CI[.07,.23]	ΔR^2 = .01* 95% CI[-.01, .04]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Table 17

Regression results using Relationship Satisfaction as the criterion for men

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Stalking victimization	0.34	0.11	.01		
Sexual victimization	-0.21	-0.13	.01		
Physical victimization	-0.04	-0.03	.00		
Psychological victimization	-0.19	-0.22	.02		
				R^2 = .092 95% CI[.00,.19]	
Step 2					
Stalking victimization	0.09	0.03	.00		
Sexual victimization	-0.25	-0.15	.02		
Physical victimization	-0.15	-0.12	.01		
Psychological victimization	-0.25	-0.29	.04		
tIPV victimization	0.14	0.25	.02		
				R^2 = .117 95% CI[.00,.21]	ΔR^2 = .02 95% CI[-.04, .09]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Table 18

Regression results using Relationship Satisfaction as the criterion for women

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Stalking victimization	-0.27	-0.09	.01		
Sexual victimization	-0.17	-0.10	.01		
Physical victimization	0.24	0.13	.01		
Psychological victimization	-0.34**	-0.39	.10		
				R^2 = .178** 95% CI[.08,.26]	
Step 2					
Stalking victimization	-0.20	-0.07	.00		
Sexual victimization	-0.15	-0.09	.01		
Physical victimization	0.26	0.14	.01		
Psychological victimization	-0.30**	-0.35	.07		
tIPV victimization	-0.06	-0.10	.01		
				R^2 = .184** 95% CI[.08,.26]	ΔR^2 = .01 95% CI[-.01, .03]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Quality of life. To investigate whether tIPV victimization is uniquely related to quality of life, I ran a hierarchical regression analysis (see Table 19). In the first model, which included in-person victimization variables, R differed significantly from 0, R^2 = .07, $F(5, 260) = 3.72$, p = .003. In-person sexual victimization uniquely predicted quality of life, β = -.19, p = .003. The addition of tIPV victimization in the second model did not significantly improve model fit, ΔR^2 < .01, $F(1, 259) = .86$, p = .35. tIPV victimization was not a unique predictor of quality of life, β = .08, p = .35. In the third model, which additionally included the interaction between gender and tIPV victimization, model fit was significantly improved, ΔR^2 = .01, $F(1, 258) = 5.44$, p = .02. The overall fit of this final third model was significant, R^2 = .09, $F(7, 218) = 3.60$, p = .001.

I completed follow-up hierarchical regression analyses to further explore the interaction between gender and tIPV victimization. For men (see Table 20), the addition of tIPV victimization did not significantly improve model fit, ΔR^2 < .01, $F(1, 65) = .13$, p = .72. TIPV victimization was not a unique predictor of quality of life for men, β = .07, p = .72. Similarly for women (see Table 21), the addition of tIPV victimization did not significantly improve model fit, ΔR^2 < .01, $F(1, 190) = .33$, p = .56. tIPV victimization was not a unique predictor of quality of life for women, β = .05, p = .56. However, sexual victimization was a unique predictor of quality of life for women, β = -.27, p < .001. Thus, although the gender interaction was significant, it appears that tIPV victimization is not a unique predictor of quality of life for men or women.

Table 19

Regression results using Quality of Life as the criterion

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Stalking victimization	0.75	0.08	.01		
Sexual victimization	-0.94**	-0.19	.03		
Physical victimization	-0.50	-0.10	.01		
Psychological victimization	-0.11	-0.04	.00		
Gender	1.20	0.05	.00		
				R^2 = .067** 95% CI[.01,.12]	
Step 2					
Stalking victimization	0.57	0.06	.00		
Sexual victimization	-0.98**	-0.20	.03		
Physical victimization	-0.58	-0.12	.01		
Psychological victimization	-0.19	-0.07	.00		
Gender	1.29	0.05	.00		
tIPV victimization	0.14	0.08	.00		
				R^2 = .070** 95% CI[.01,.12]	ΔR^2 < .01 95% CI[-.01, .02]
Step 3					
Stalking victimization	0.62	0.07	.00		
Sexual victimization	-1.00**	-0.20	.03		
Physical victimization	-0.74*	-0.15	.01		
Psychological victimization	-0.14	-0.06	.00		
Gender	1.54	0.06	.00		
tIPV victimization	0.50*	0.28	.02		
Gender by	-0.53*	-0.24	.02		

tIPV victimization interaction			
		R^2 = .089**	ΔR^2 = .02*
		95% CI[.02,.14]	95% CI[-.01, .05]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Table 20

Regression results using Quality of Life as the criterion for men

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Stalking victimization	0.95	0.10	.01		
Sexual victimization	-0.06	-0.01	.00		
Physical victimization	-0.58	-0.15	.01		
Psychological victimization	0.40	0.16	.01		
				R^2 = .030 95% CI[.00,.09]	
Step 2					
Stalking victimization	0.74	0.08	.00		
Sexual victimization	-0.09	-0.02	.00		
Physical victimization	-0.68	-0.18	.01		
Psychological victimization	0.35	0.14	.01		
tIPV victimization	0.11	0.07	.00		
				R^2 = .031 95% CI[.00,.07]	ΔR^2 < .01 95% CI[-.02, .02]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Table 21

Regression results using Quality of Life as the criterion for women

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Stalking victimization	0.87	0.10	.01		
Sexual victimization	-1.30**	-0.26	.06		
Physical victimization	-0.75	-0.13	.01		
Psychological victimization	-0.32	-0.12	.01		
				R^2 = .136** 95% CI[.05,.21]	
Step 1					
Stalking victimization	0.76	0.09	.01		
Sexual victimization	-1.33**	-0.27	.06		
Physical victimization	-0.79	-0.14	.01		
Psychological victimization	-0.38	-0.14	.01		
tIPV victimization	0.10	0.05	.00		
				R^2 = .137** 95% CI[.04,.21]	ΔR^2 < .01 95% CI[-.01, .01]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Social support. A hierarchical regression analysis was also run to determine whether tIPV victimization predicted levels of social support from individuals besides the participant's romantic partner (see Table 22). In the first model, which included in-person victimization variables, R differed significantly from 0, $R^2 = .05$, $F(5, 261) = 2.94$, $p = .01$. In-person sexual victimization was a unique predictor of social support in this model, $\beta = -.16$, $p = .02$. The inclusion of tIPV victimization in the second model did not significantly improve model fit, $\Delta R^2 < .01$, $F(1, 260) = .10$, $p = .75$. TIPV victimization was not a unique predictor of social support in this equation, $\beta = -.03$, $p = .75$. The inclusion of the interaction between tIPV victimization and gender in the third model also did not significantly improve model fit, $\Delta R^2 < .01$, $F(1, 259) = .32$, $p = .57$. This final model overall was significant, $R^2 = .06$, $F(7, 259) = 2.15$, $p = .04$. However, when applying the threshold for significance from the Bonferroni correction ($p < .00625$), the model is not significant. This suggests that neither tIPV victimization nor other forms of in-person victimization adequately predict social support outside of romantic relationships.

Table 22

Regression results using Social Support as the criterion

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Stalking victimization	0.66	0.10	.01		
Sexual victimization	-0.55*	-0.16	.02		
Physical victimization	-0.39	-0.11	.01		
Psychological victimization	-0.04	-0.02	.00		
Gender	1.05	0.06	.00		
				R^2 = .053* 95% CI[.00,.10]	
Step 2					
Stalking victimization	0.70	0.11	.01		
Sexual victimization	-0.54*	-0.15	.02		
Physical victimization	-0.37	-0.11	.01		
Psychological victimization	-0.02	-0.01	.00		
Gender	1.03	0.06	.00		
tIIPV victimization	-0.03	-0.03	.00		
				R^2 = .054* 95% CI[.00,.09]	ΔR^2 < .01 95% CI[-.00, .00]
Step 3					
Stalking victimization	0.70	0.11	.01		
Sexual victimization	-0.54*	-0.15	.02		
Physical victimization	-0.40	-0.12	.01		
Psychological victimization	-0.02	-0.01	.00		
Gender	1.07	0.06	.00		
tIPV victimization	0.03	0.02	.00		
Gender by	-0.09	-0.06	.00		

tIPV victimization interaction		
	R^2 = .055*	ΔR^2 < .01
	95% CI[.00,.09]	95% CI[-.01, .01]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Post-traumatic stress symptoms. The final victim impact investigated is post-traumatic stress symptoms. Once again, a hierarchical regression analysis was run to determine if tIPV victimization uniquely predicted post-traumatic stress (Table 23). In the first step, which included the in-person victimization variables, R^2 differed significantly from 0, $R^2 = .15$, $F(5, 260) = 9.35$, $p < .001$. In this model, in-person sexual IPV victimization uniquely predicted post-traumatic stress, $\beta = .30$, $p < .001$. Adding tIPV victimization in the second model did not significantly improve model fit, $\Delta R^2 < .01$, $F(1, 259) = .02$, $p = .88$. tIPV victimization was not a significant unique predictor of post-traumatic stress symptoms, $\beta = -.01$, $p = .88$. The addition of the interaction between tIPV victimization and gender in the third model significantly improved model fit, $\Delta R^2 = .02$, $F(1, 258) = 6.36$, $p = .01$. The fit of the final model with all predictors was significant, $R^2 = .17$, $F(7, 258) = 7.70$, $p < .001$.

To further investigate the interaction between tIPV victimization and gender, follow-up hierarchical regressions were run separately for men and women. For men (see Table 24), the addition of tIPV victimization in the second model did not improve model fit, $\Delta R^2 < .01$, $F(1, 65) = .51$, $p = .48$. tIPV victimization was not a unique predictor of post-traumatic stress symptoms for men, $\beta = -.13$, $p = .48$. However, in-person sexual IPV victimization was a unique predictor of post-traumatic stress symptoms for men, $\beta = .30$, $p = .05$. For women (see Table 25), the addition of tIPV victimization in the second model also did not improve model fit, $\Delta R^2 < .01$, $F(1, 190) = .28$, $p = .59$. Here again, tIPV victimization was not a unique predictor of post-traumatic stress symptoms for women, $\beta = .05$, $p = .59$. In-person sexual IPV victimization was a unique predictor of post-traumatic stress symptoms among women, $\beta = .31$, $p < .001$. Thus, it appears that post-traumatic stress symptoms were not uniquely predicted by tIPV victimization for either men or women.

Table 23

Regression results using Post-traumatic stress symptoms as the criterion

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Stalking victimization	-0.43	-0.04	.00		
Sexual victimization	1.76**	0.30	.08		
Physical victimization	0.71	0.12	.01		
Psychological victimization	0.27	0.09	.00		
Gender	-0.19	-0.01	.00		
				R^2 = .152** 95% CI[.07,.22]	
Step 2					
Stalking victimization	-0.40	-0.04	.00		
Sexual victimization	1.77**	0.30	.07		
Physical victimization	0.72	0.13	.01		
Psychological victimization	0.28	0.09	.00		
Gender	-0.21	-0.01	.00		
tIPV victimization	-0.02	-0.01	.00		
				R^2 = .152** 95% CI[.07,.22]	ΔR^2 < .01 95% CI[-.00, .00]
Step 3					
Stalking victimization	-0.44	-0.04	.00		
Sexual victimization	1.79**	0.30	.08		
Physical victimization	0.93*	0.16	.02		
Psychological victimization	0.23	0.08	.00		
Gender	-0.54	-0.02	.00		
tIPV victimization	-0.47	-0.22	.01		
Gender by	0.65*	0.25	.02		

tIPV victimization interaction			
		R^2 = .173**	ΔR^2 = .02*
		95% CI[.08,.23]	95% CI[-.01, .05]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Table 24

Regression results using Post-traumatic stress as the criterion for men

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Stalking victimization	-0.96	-0.10	.01		
Sexual victimization	1.39	0.26	.05		
Physical victimization	0.73	0.18	.02		
Psychological victimization	-0.26	-0.10	.00		
				R^2 = .086 95% CI[.00,.18]	
Step 2					
Stalking victimization	-0.53	-0.05	.00		
Sexual victimization	1.45*	0.28	.06		
Physical victimization	0.92	0.22	.02		
Psychological victimization	-0.15	-0.06	.00		
tIPV victimization	-0.23	-0.13	.01		
				R^2 = .093 95% CI[.00,.18]	ΔR^2 = .01 95% CI[-.03, .04]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Table 25

Regression results using Post-traumatic stress as the criterion for women

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Stalking victimization	-0.44	-0.04	.00		
Sexual victimization	1.94**	0.32	.09		
Physical victimization	1.00	0.14	.01		
Psychological victimization	0.46	0.14	.01		
				R^2 = .199** 95% CI[.09,.28]	
Step 2					
Stalking victimization	-0.55	-0.05	.00		
Sexual victimization	1.91**	0.31	.08		
Physical victimization	0.96	0.14	.01		
Psychological victimization	0.40	0.12	.01		
tIPV victimization	0.10	0.05	.00		
				R^2 = .200** 95% CI[.09,.28]	ΔR^2 < .01 95% CI[-.01, .01]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

RQ2: Perpetration Factors

Preliminary analyses. The mean scores, standard deviations, range, *t*-tests for gender differences, and α coefficients for the key variables in research question 2 can be found in Table 26. Men reported significantly more technology usage and sexual IPV perpetration than women. Correlations for key variables in research question 2 are in Table 27. For women, tIPV perpetration was correlated with technology usage, technological disinhibition, and all forms of in-person perpetration. For men, tIPV perpetration was correlated with in-person perpetration variables only.

Table 26

Scale Descriptive Statistics and Reliability for Research Question 2

	Mean	Standard deviation	Minimum	Maximum	*t*-test of gender differences	α
tIPV perpetration[a]	5.23	6.44	0	27	.36	.81
Technology usage[b]	185.76	39.64	70	312	2.53*	.93
Technological disinhibition[c]	13.55	5.30	0	24	1.01	.79
Physical perpetration[d]	.74	1.67	0	7	1.15	.60
Psychological perpetration[e]	3.81	4.56	0	18	-.43	.71
Sexual perpetration[f]	.92	1.51	0	6	4.96**	.49
Stalking perpetration[g]	.42	1.24	0	7	.99	.82
Texting[h]	22.17	3.93	0	27	-1.35	.87
Social media use[i]	35.09	9.26	0	54	-1.67	.81

Note. * indicates $p < .05$; ** indicates $p < .01$
tIPV = technological intimate partner violence
[a]Cyber Aggression in Relationships Scale
[b]Media and Technology Usage and Attitudes Scale
[c]Revised Online Disinhibition Scale
[d, e]Conflict Tactics Scale Revised

[f]Sexual Experiences Survey
[g]Stalking Victimization Questionnaire
[h]Media and Technology Usage and Attitudes Scales
[i]Media and Technology Usage and Attitudes Scale

Table 27

Correlations between key variables in Research Question 2

	1	2	3	4	5	6	7	8	9
1. tIPV perpetration		.03	.14	.28*	.41**	.31**	.52**	-.21	.11
2.Technology usage	.25**		.07	-.13	-.11	.05	.11	.40**	.72**
3.Technological disinhibition	.18**	.17*		.09	.06	.22	.15	.01	.16
4. Physical perpetration	.31**	.25**	-.01		.55**	.27*	-.001	-.04	-.09
5. Psychological perpetration	.52**	.26**	.11	.54**		.38**	.17	.13	-.07
6. Sexual perpetration	.31**	.16*	.04	.23**	.39**		.18	<.001	.07
7. Stalking perpetration	.24**	.09	-.06	.25**	.33**	.10		.01	-.02
8. Texting	.20**	.49**	.06	.07	.09	.03	.13		.35**
9. Social media usage	.29**	.75**	.19**	.09	.16*	.14*	.08	.47**	

Note. Males above the diagonal, females below the diagonal. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence.

Technology-related perpetration factors. In order to test how technology-related factors usage and disinhibition related to tIPV perpetration, I performed a hierarchical regression analysis (see Table 28). In the first model, the main effects of gender, technology usage, and disinhibition were evaluated. The R of this model significantly differed from 0, $R^2 = .063$, $F(3, 264) = 5.95$, $p < .001$. Both the main effect of technology usage ($\beta = .16$, $p = .008$) and technological disinhibition ($\beta = .17$, $p = .005$) uniquely predicted perpetration of tIPV. In the second model, the interaction between technology usage and technological disinhibition was added. The addition of this interaction did not improve model fit, $\Delta R^2 = .01$, $F(1, 263) = 1.87$, $p = .17$. The interaction between technology usage and technological disinhibition was not significant, $\beta = .08$, $p = .17$. In the final model, the interaction between technology usage, technological disinhibition, and gender was added. This also did not significantly improve model

fit, $\Delta R^2 < .01$, $F(1, 262) = .85$, $p = .36$. The three-way interaction was also not significant, $\beta = .15$, $p = .36$. Thus, it appears that both technological disinhibition and technology usage uniquely predict tIPV perpetration, but that the amount of technological disinhibition does not moderate the relationship between technology usage and tIPV perpetration.

Table 28

Regression results using tIPV perpetration as the criterion for technology-related factors

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Technology use	0.03**	0.16	.03		
Technological disinhibition	0.21**	0.17	.03		
Gender	0.12	0.01	.00		
				R^2 = .063** 95% CI[.01,.12]	
Step 2					
Technology use	0.03**	0.16	.03		
Technological disinhibition	0.20**	0.16	.03		
Gender	0.04	0.00	.00		
Technology use by disinhibition interaction	0.00	0.08	.01		
				R^2 = .070** 95% CI[.01,.12]	ΔR^2 = .01 95% CI[-.01, .03]
Step 3					
Technology use	0.03**	0.16	.03		
Technological disinhibition	0.20**	0.17	.03		
Gender	-0.00	-0.00	.00		

Technology use by disinhibition interaction	-0.00	-0.05	.00		
Technology use by disinhibition by gender interaction	0.00	0.15	.00		
				R^2 = .073**	ΔR^2 < .01
				95% CI[.01,.12]	95% CI[-.01, .02]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Comparing in-person and technology-related factors. In order to compare the relative influence on tIPV perpetration between technology-related factors and in-person IPV perpetration, a regression analysis was run (see Table 29). This analysis included various forms of in-person perpetration (i.e., stalking, sexual, psychological, and physical) as well as the previously explored technology-related variables (i.e., technology usage and technological disinhibition). The R^2 of this model differed significantly from 0, $R^2 = .32$, $F(7, 256) = 17.36$, $p < .001$. Several forms of in-person perpetration significantly predicted tIPV perpetration. Specifically, psychological IPV perpetration, $\beta = .29$, $p < .001$, sexual coercion perpetration, $\beta = .13$, $p = .03$, and stalking perpetration, $\beta = .23$, $p < .001$ all uniquely predicted tIPV perpetration. Additionally, technological disinhibition predicted tIPV perpetration, technological disinhibition, $\beta = .14$, $p = .008$. In this model, physical IPV perpetration $\beta = 0.10$, $p = .09$ and technology usage, $\beta = .04$, $p = .44$, failed to uniquely predict tIPV perpetration. Thus, it appears that technological disinhibition, but not technology usage, along with several forms of in-person perpetration uniquely predict tIPV perpetration.

Table 29

Regression results using tIPV perpetration as the criterion including in-person perpetration

Predictor	*b*	*beta*	sr^2	Fit
Psychological perpetration	0.42**	0.29	.05	
Physical perpetration	0.41	0.10	.01	
Sexual perpetration	0.55*	0.13	.01	
Stalking perpetration	1.21**	0.23	.05	
Technology use	0.01	0.04	.00	
Technological disinhibition	0.17**	0.14	.02	
Gender	0.56	0.04	.00	
				R^2 = .322**
				95% CI[.22,.39]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Analyzing specific forms of technology usage. I chose to follow-up these original analyses with a more specific analysis of types of technology usage that may be related to perpetration of tIPV. This was done because the above analysis conceptualized technology usage as a whole, combining items such as, for example, TV watching with online gaming with text messaging an intimate partner. It is possible that there are certain types of technology usage that are especially likely to be related to tIPV perpetration. Specifically, I wanted to explore how the types of technology usage that are most commonly used to abuse one's partner (i.e., texting and social media use) relate to perpetration. Note that these analyses were not originally planned, and therefore should be viewed as exploratory.

To begin, I performed an exploratory factor analysis on the items which measured technology usage. This was done because the original scale is not well-established, and thus I wanted to establish statistically sound subscales to measure texting and social media use based on the current sample. The method of performing and evaluating the EFAs was identical to what was done to explore the factor structure of the CARS (described in section "Factor Analysis of the Cyber Aggression in Relationships Scale" under "Measures"). First, a parallel analysis (Horn, 1965) was run to determine how many factors may be appropriate for the scale in an exploratory factor analysis (EFA). The results of the parallel analysis suggested that a maximum of 13 factors would be appropriate. However, upon performing a 13-factor EFA, several subscales had only one or two items within a factor. Because such small subscales are undesirable (Preacher & MacCallum, 2003), I ran further EFAs with fewer factors. First, I ran a 12-factor EFA, which similarly had multiple subscales comprised of only two items. I then ran an 11-factor EFA. While this EFA had one factor with only two items, the factor made conceptual sense, as there were only two items measuring a specific form of technology usage,

media sharing. The resulting factor structure of the two factors to be used in further analysis (i.e., texting and social media use) is presented in Table 30. The RMSEA index for this model was adequate, RMSEA = .058. From this analysis, there was clearly one factor measuring texting (3 items), and one factor measuring social media usage (6 items). The items that comprised these factors were used in follow-up analyses about tIPV perpetration. Descriptive statistics for these subscales are in Table 26, and correlations with other variables included in research question 2 are in Table 27.

Table 30

Pattern Matrix for the texting and social media subscales of the MTUAS

Subscale & Item	Factor	
	1	2
1.Social media use (6 items)		
Check your Facebook page or other social networks.	.72	
Check your social media from your smartphone.	.84	
Check social media at work or school.	.91	
Browse profiles and photos.	.50	
Read postings.	.60	
Click “Like” to a posting, photo, etc.	.37	
2.Texting (3 items)		
Send and receive text messages on a mobile phone.		.78
Send and receive text messages FROM A ROMANTIC PARTNER on a mobile phone.		.73
Check for text messages on a mobile phone.		.67

To determine whether specific forms of technology usage may predict tIPV perpetration, and whether these forms may be influenced by disinhibition, a hierarchical regression was performed (see Table 31). Instead of using a full-scale score for technology usage, I used the scores from the two established subscales for texting and social media usage. Unlike the previous hierarchical regression for perpetration, this regression did not include gender, since neither gender nor the interaction with gender was significant in the previous analysis. In the first

model, which included social media use, texting, and technological disinhibition as predictors, R^2 differed significantly from 0, $R^2 = .08$, $F(3, 265) = 7.79$, $p < .001$. While both social media use, $\beta = .23$, $p < .001$, and technological disinhibition, $\beta = .15$, $p = .01$, uniquely predicted tIPV perpetration, texting did not, $\beta = -.04$, $p = .57$. In the second model, two interactions were added to the model: (1) the interaction between social media use and technological disinhibition, and (2) the interaction between texting and technological disinhibition. The addition of these interactions in the second model failed to improve model fit, $\Delta R^2 < .00$, $F(2, 263) = .30$, $p = .74$. Neither the interaction between social media use and disinhibition, $\beta = -.01$, $p = .85$, nor the interaction between texting and disinhibition, $\beta = .05$, $p = .48$ was significant. Thus, it appears that both social media use and disinhibition are uniquely related to tIPV perpetration, but that these variables do not interact. Further, these results suggest that the frequency of texting is not related to tIPV perpetration.

Table 31

Regression results using tIPV perpetration as the criterion for specific forms of technology usage

Predictor	*b*	*beta*	sr^2	Fit	Difference
Step 1					
Social media use	0.16**	0.23	.04		
Texting	-0.06	-0.04	.00		
Technological disinhibition	0.19*	0.15	.02		
				R^2 = .081** 95% CI[.02,.14]	
Step 2					
Social media use	0.16**	0.23	.04		
Texting	-0.05	-0.03	.00		
Technological disinhibition	0.18*	0.15	.02		
Social media use by disinhibition interaction	-0.00	-0.01	.00		
Texting by disinhibition interaction	0.02	0.05	.00		
				R^2 = .083** 95% CI[.02,.14]	ΔR^2 < .01 95% CI[-.01, .01]

Note. * indicates $p < .05$; ** indicates $p < .01$. tIPV = technological intimate partner violence. A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights; *beta* indicates the standardized regression weights; sr^2 represents the semi-partial correlation squared.

Discussion

The aim of this thesis was to explore victim impacts related to tIPV, as well as technology-related perpetration factors. I found that tIPV victimization was significantly related to greater alcohol use among both men and women, and greater fear of partner among women even after controlling for in-person victimization. Additionally, gender moderated the relationship between tIPV and several victim impacts, including depression, perceived stress, relationship satisfaction, quality of life, and post-traumatic stress symptoms. However, upon further analysis tIPV victimization failed to uniquely predict these outcomes for either men or women over and above the effects of other forms of in-person victimization. This could be due to a small sample size for men, which was only sufficient to detect large effects. Although not significant, the trend overall was for men to experience less impact than women. Because these results are not significant, they should be interpreted with caution, however the results do align with previous findings that impacts of in-person IPV are more severe among women (Prospero, 2009).

For technology-related perpetration factors, I found that both technology usage and technological disinhibition significantly predicted tIPV perpetration, but that, contrary to my hypothesis, technological disinhibition did not moderate the relationship between technology usage and tIPV perpetration. When technology usage was split into different forms (i.e., texting and social media use), social media use significantly predicted tIPV perpetration, whereas texting did not. Further, when in-person IPV perpetration variables were included, technological disinhibition remained a significant predictor, but technology usage became non-significant, suggesting that technological disinhibition along with in-person IPV perpetration are better predictors of tIPV perpetration than technology usage alone.

Victim Impacts

Of the victim impacts investigated, tIPV emerged as a unique predictor of alcohol use among men and women, and a unique predictor of fear of partner among women only when controlling for in-person victimization experiences. The finding that tIPV victimization is associated with alcohol use corroborates several studies which have demonstrated an association between tIPV victimization and various forms of alcohol and/or substance use (Van Ouytsel, Ponnet, Walrave, & Temple, 2016), even after controlling for other victimization experiences (Bennett, Guran, Ramos, & Margolin, 2011). Further, one study looked specifically at the impacts of stalking victimization (including both in-person and cyberstalking), and found that stalking victimization predicted alcohol use even when controlling for physical victimization (Strauss, Haynes, Cornelius, & Shorey, 2016), providing further evidence of a link between some forms of tIPV victimization and alcohol use. However, one study which looked at substance use generally (i.e., including alcohol use, marijuana, and harder drugs) found no relationship between tIPV victimization and substance use. This suggests that tIPV victimization may have a particularly unique association with alcohol use, but not other substances. These results have also been demonstrated among cyberbullying victimization generally, where cyberbullying victimization predicted alcohol use both when controlling for in-person victimization and when not (Chan & LaGreca, 2016; Goebert et al., 2011; Litwiller & Brausch, 2013). In fact, similar to the results of the current study, it has been found that cyber victimization was the strongest predictor of alcohol use use even when controlling for in-person victimization (Chan & La Greca, 2016). However, the results have not been fully consistent across studies, with one study finding no relationship between cyberbullying victimization and alcohol use (Selkie et al., 2015). Overall, however, results have more consistently demonstrated a relationship between both tIPV

and cyberbullying victimization and increased alcohol use, suggesting a likely link between the two.

Despite the consistency of this relationship, little theorizing has been done on why this particular relationship may be so strong. One theory with empirical support is that alcohol may be used as a coping mechanism for victimization (Schenk & Fremouw, 2012), and another is that being involved in abusive dating relationships is part of being involved with a range of high risk behaviors (Van Ouytsel, Torres, Choi, Ponnet, Walrave, & Temple, 2017). For example, it could be that individuals who use more alcohol also engage in more fights with their partner, thus making tIPV more common in these relationships. While both of these explanations seem plausible, neither addresses why alcohol use may be related to tIPV victimization more strongly than in-person forms of victimization. Notably, alcohol use was the only victim impact in the current study which was uniquely predicted by tIPV victimization for both men and women. This suggests that there may be some unique relationship between tIPV victimization and alcohol use. One potential explanation is the prevalence of both of these behaviors in emerging adulthood. Both technology use and alcohol use are common among this age group (Raskin et al., 2006; Subrahmanyan et al., 2008), and thus tIPV experiences may be common, and the dominant means of coping with such victimization and other forms of distress may be alcohol use. Since alcohol use is also a fairly avoidant coping strategy, it is possible that it is used more to manage tIPV victimization in attempts to minimize or avoid thinking about the behaviors as opposed to acknowledging the behaviors, which could lead to greater stress or fear. It is theorized that, due to a lack of social cues, there is greater potential for ambiguity and misunderstandings in technological communication (Runions et al., 2013), and thus victims may be more able to avoid acknowledgment of this form of victimization. Further quantitative and qualitative investigations

should work to identify potential mechanisms of this relationship and incorporate the perspectives of victims on why this relationship exists.

Despite the finding that men reported significantly more fear of their partner than women in this study, tIPV victimization uniquely predicted fear of partner among women only, along with a range of in-person victimization variables (sexual, physical, and psychological IPV victimization. To my knowledge, no previous research has examined the association between tIPV victimization and fear of partner. Notably, it appears that IPV victimization overall is much more strongly related to fear of partner for women than men, with only physical IPV victimization being a significant predictor of fear of partner for men. Thus, it could be that tIPV victimization is related to fear of partner for women only because IPV victimization overall is more pervasively related to fear of partner for women. It could also be that these technological behaviors are associated with later in-person victimization experiences (i.e., pressure to send sexual photos through technology may be followed by pressure to perform sexual acts in-person), and that this makes these tIPV victimization experiences more impactful. For men, the lack of relationship between tIPV victimization and fear of partner could be because the danger associated with in-person IPV is more imminent and widespread (i.e., could lead to immediate physical harm). Thus, greater fear may be associated with these victimization experiences as opposed to tIPV victimization, which provides more physical distance between the victim and perpetrator. As mentioned previously, it is easier to misinterpret technological communication than face to face (Runions et al., 2013), and thus it may be possible to view these experiences more lightly than in-person victimization experiences. Future research should further investigate gender differences in the relationship between tIPV victimization and fear of partner, with special attention paid to mechanisms that may explain this differential impact.

The most consistent form of victimization that predicted well-being outcomes was in-person sexual IPV victimization. Sexual IPV victimization was the only unique predictor of depression, stress, quality of life, social support, and post-traumatic stress. It also uniquely predicted fear of partner along with other forms of IPV victimization. This corroborates past findings on the detrimental impact of sexual IPV victimization on a range of well-being outcomes such as depression, physical health, social functioning, and post-traumatic stress disorder (e.g., Bonomi, Anderson, Rivera, & Thompson, 2007; Dichter, Marcus, Wagner, & Bonomi, 2014; Pico-Alfonsno et al., 2006). The current results underscore the continued importance of sexual IPV victimization, even in the presence of other forms of IPV victimization.

tIPV was not a unique predictor of depression, stress, relationship satisfaction, quality of life, social support, and post-traumatic stress for men or women. Although previous research has found a relationship between tIPV and depression (Zweig, Lachman, Yahner, & Dank, 2014), this previous study failed to control for in-person victimization. Considerably more studies have examined the relationship between depression and cyberbullying (i.e., technological victimization that does not necessarily occur by a romantic partner). Although several of these studies also found a relationship between cyberbullying victimization and depression, many also failed to control for any form of in-person victimization (Feinstein, Bhatia, & Davila, 2014; Goebert, Else, Matsu, Chung-Do, & Chan, 2011; Schenk & Fremouw, 2012). However, one study found higher odds of depression only among those who both perpetrated and were victimized by cyberbullying, and no increased odds of depression among those who were solely victims (Selkie, Kota, Chan, & Moreno, 2015). This suggests that technological victimization

alone may not be sufficient to be associated with depressive symptoms. Thus, it could be that several previously identified impacts of tIPV victimization, including depression, are better explained by concurrent in-person victimization experiences.

A lack of significant relationship between tIPV victimization and other well-being domains, such as stress and relationship satisfaction, is consistent with previous research. For example, a previous study has found a relationship between stress and in-person IPV victimization, but no such relationship between stress and tIPV victimization (Carlson, Fripp, Cook, & Kelchner, 2015). While no specific studies have investigated associations between tIPV victimization and relationship satisfaction, even evidence of an association between in-person IPV victimization and relationship satisfaction is mixed. There is some evidence that IPV victimization is negatively related to relationship satisfaction (Kaura & Lohman, 2007; Williams & Frieze, 2005), but one study that focused solely on physical IPV victimization found no association with relationship satisfaction (Amanor-Boadu, Stith, Miller, Cook, & Allen, 2011). Overall, it appears that relationship characteristics, such as perceived seriousness of the relationship, may influence the link between IPV victimization and relationship satisfaction (Katz et al., 2002). Thus, it is perhaps unsurprising that tIPV victimization was not associated with outcomes such as stress and relationship satisfaction in the current study.

Other well-being domains explored in the current study (i.e., post-traumatic stress symptoms, quality of life, and social support) had no prior quantitative investigations of their association with tIPV victimization. Although there is a well-established relationship between post-traumatic stress symptoms and in-person IPV victimization (Amanor-Boadu et al., 2011; Coker et al., 2005; Dillon, Hussain, Loxton, & Rahman, 2013; Golding, 1999; Harned, 2001; Randle & Graham, 2011), it is logical that this association would not necessarily extend to tIPV

victimization when thinking about the nature of these two forms of violence. Though tIPV may be distressing, the distance between the communicators is greater through technology, meaning the imminent threat to bodily harm is necessarily less when being victimized through technology as opposed to in person. Since post-traumatic stress symptoms are predicated on the experience of an event or events that cause imminent threat to bodily integrity, it is logical that those victimization experiences that are more able to engender such a sense of threat (i.e., in-person experiences) are more strongly related to post-traumatic stress symptoms.

There is less reason to expect differences in impact between tIPV and in-person victimization for variables such as quality of life and social support, although neither showed an association with tIPV victimization in the current study when controlling for in-person victimization experiences. However, it is notable that the current study found less of an association between multiple forms of IPV victimization and both social support and quality of life than has been reported by previous research. For both of these outcomes, only sexual victimization was a significant predictor in the current study, whereas in previous research, other forms of IPV victimization (i.e., physical, psychological) have additionally showed associations with these variables (Beeble, Bybee, Sullivan, & Adams, 2009; Bonomi et al., 2006; Katerndahl, Burge, Ferrer, Becho, & Wood, 2013; Leung, Leung, Ng, & Ho, 2005; Sotskova, Coghlan, & Woodin, 2011). These differences could be due to the nature of the intimate relationships in the current study (i.e., dating as opposed to married or cohabiting), and the nature of the relationship violence experienced (i.e., mainly low levels of violence in the current study). Thus, it appears that there may be additional factors that influence associations between different forms of IPV victimization and outcomes such as quality of life and social support. Future research should seek to identify the impacts of tIPV in different types of relationships, and in the presence of

more severe forms of in-person victimization in order to determine if these variables influence the impact of tIPV victimization.

With the exception of alcohol use and women's fear of their partners, the results of the current study overwhelmingly suggest that tIPV does not predict negative outcomes above those predicted by in-person victimization. Overall, very few studies have examined the impacts of tIPV, and even fewer have done so while controlling for in-person IPV victimization. Besides those studies previously discussed, other studies have asked participants for their subjective emotions about tIPV victimization, and found that adolescent girls are more likely to attribute negative impacts to their experiences than boys (Barter et al., 2017; Reed, Tolman, & Ward, 2017). While this appears in contradiction to the current results, which overall suggest few differences in impact between genders, the subjective reporting of impact in these previous studies differs significantly from the way impacts were measured in the current study. Rather than asking individuals how they felt after being victimized through technology specifically, participants in the present study reported on various aspects of their life in a seemingly unrelated way to their victimization, and then the relations between the two constructs were examined. While it is notable that individuals tend to self-report impacts of experiencing different forms of cyber victimization when asked explicitly (Mishna, et al., 2018), these impacts may be better explained by, or in conjunction with, other forms of victimization. Further, one review of cyber victimization generally highlighted that a number of personal characteristics, such as emotional intelligence, agreeableness, coping skills, and optimism, are related to differential impacts of victimization (Jenaro, Flores, & Frías, 2018). Thus, it could be that some individuals are particularly adversely effected by tIPV victimization, but that the impacts depend on the characteristics of the victim as well. Future research should seek to identify potential mediators

and moderators of tIPV impacts in order to determine if there is a sub-population that is particularly affected by this form of abuse.

There could be several reasons that tIPV victimization largely does not predict outcomes above in-person victimization in the current study. First, in both the current study and other studies, the overlap between in-person and tIPV victimization is substantial (Marganski & Melander, 2015; Temple et al., 2016). This suggests that victimization tends to occur in multiple contexts, and thus it could be that, amidst a range of victimization experiences, in-person experiences tend to be more impactful than technological. This is important, as there appears to be media panic about the impacts of technology on relationships, with articles titled "How technology is ruining modern romance" (Jones, 2017), "How to prevent technology from ruining your relationship" (Rinaldi, 2015) becoming commonplace. The discrepancy between media perceptions of the negative impacts of technology and research evidence has been highlighted in the cyberbullying literature, where findings are similar to those reflected in the present study: the overlap between in-person and technological victimization is substantial, with the results suggesting that the use of technology for abuse has not created large numbers of new victims (Olweus, 2012). The results of the current study suggest not only that tIPV does not create many new victims, but also that it may not lead to more impacts outside of other victimization experiences. This does not mean that tIPV should be disregarded or trivialized. After all, the overlap between in-person and tIPV suggests that tIPV is a commonly used abuse tactic within high-risk relationships. Instead, as opposed to tIPV being treated as a unique and new form of victimization for which individuals may require unique help, the current results suggest that tIPV forms part of a constellation of abuse that can occur in relationships, and it is best to focus

prevention and treatment efforts on all forms of abuse, rather than focusing solely on tIPV and failing to address the many other forms of abuse that may occur in relationships.

Second, definitional issues of what behaviors constitute tIPV, and the related issue of consistent measurement of tIPV make it difficult to make conclusions with too much certainty. It has been noted that a lack of consensus about the definition and measurement of tIPV has plagued this area of research, at times with each individual study seemingly developing its own way to operationalize tIPV (Brown & Hegarty, 2018). While measure development is often done in consultation with those who have experienced tIPV, there seems to be some discrepancy between what researchers perceive as abuse and what those who use technology in their relationships constitute as abuse. For example, there is evidence that at least some of the behaviors which researchers consider cyberstalking are considered normal forms of relationship maintenance, and at times could even be considered prosocial and appropriate among adolescents (Howard, Debnam, & Strausser, 2017; Lucero et al., 2014). It is possible that these behaviors do, in fact, constitute abuse or some sort of marker of relationship dysfunction, and that those who are experiencing them do not view them that way because abuse has been normalized within their relationship in the same way that in-person forms of abuse can come to seem normal in a relationship over time (Temple et al., 2016). However, it is also possible that as technology develops, new norms are also developing, and that some behaviors that may have at one time seemed shockingly intrusive and damaging are now a normal, mundane, non-impactful aspect of living in our technological world. Thus, it is possible that few impacts were found in the current study because at least a subset of the items designed to measure tIPV are simply not as impactful to relationships as researchers may have originally thought. If research accumulates demonstrating a lack of impact of victimization by specific technological behaviors, researchers

must at least consider the possibility that if participants do not appear bothered by particular behaviors, and results suggest that they are not being adversely impacted by behaviors, then the behaviors themselves may not be abusive. Thus, future researchers would do well to focus efforts on clearly defining the line between what is considered a normative, relationship maintaining behavior, and what constitutes some form of abuse towards a partner through technology.

Finally, it could be that the current study combines individuals in multiple different forms of abusive relationships, thus making it more difficult to differentiate impacts. For example, it has been well-established that individuals in relationships characterized by intermittent violence in the context of an argument experience less severe impacts than those in relationships characterized by violence as a means of dominance and control (Johnson & Leone, 2005; Whitaker, 2013). As the current study did not distinguish between violence as the result of an argument and violence as a means to control, it is not possible to determine which pattern of violence participants are experiencing. Thus, it is possible that a subset of participants in the current study experience more severe impacts of both in-person and tIPV due to the controlling nature of the violence. Future research should integrate measurements of control within their analysis to determine how this interacts both with forms of violence and outcomes.

Perpetration Factors

I found evidence that both the amount of technology usage and the amount of technological disinhibition uniquely contributed to tIPV perpetration. However, I found no evidence that technological disinhibition moderated the relationship between technology usage and tIPV perpetration. This is counter to what I had hypothesized based on the I^3 theory of IPV perpetration (Finkel et al., 2012), which highlights that disinhibiting factors are an important aspect of what leads to IPV perpetration. One possibility for the lack of moderation effect is that

communication with one's romantic partner through technology may not be as disinhibiting as other forms of communication through technology. In Suler's (2005) original theory of online disinhibition, anonymity was conceptualized as a key contributor to online disinhibition. When speaking to one's partner through technology, their identity is always known, and thus the full extent of technological disinhibition may not occur in that context. Another is that technological disinhibition may not be a stable trait, as it was treated in the current study, but may fluctuate over time. For example, one might be more likely to feel disinhibited through technology if they are alone versus in a group, or angry versus content, and so on. Future research should undertake more time-sensitive analyses in order to determine how technological communication and disinhibition interplay over a shorter duration of time.

The finding that technology usage uniquely contributes to tIPV perpetration is in line with previous research. Specifically, the current results build on previous results by highlighting that amount of general technology usage is enough to uniquely contribute to tIPV perpetration. This differs from previous research, which has largely focused specifically on risky technology usage (e.g., looking for new friends on the Internet, adding people as friends they have never met face to face, sending personal information to someone they have never met face to face) having a relationship with both being a victim and an aggressor through technology (Jenaro, Flores, & Frías, 2018; Van Ouytsel, Ponnet, & Walrave, 2016). The measure of technology usage in the current study did not specifically probe risky technology usage areas, thus adding to the previous literature by demonstrating that even seemingly neutral technology usage may increase the opportunity for and likelihood of aggressing.

When specific forms of technology usage (i.e., texting and social media) were analyzed in the current study, only social media use was uniquely related to tIPV perpetration. Previous

findings have demonstrated that amount of social media use is related to victimization (Van Ouytsel et al., 2016a) and cyberstalking perpetration (Marcum, Higgins, & Nicholson, 2017). While no studies have looked at links between smartphones and tIPV perpetration, a study examining tIPV victimization demonstrated that neither smartphone ownership nor having a mobile data plan were linked to victimization, whereas social media use was (Van Ouytsel et al., 2016a). This demonstrates that different forms of technology usage relate to different levels of risk, with more public forms of usage being riskier than private forms. One explanation for this is that social media use provides an additional, more public platform for abuse to take place. Notably, several of the items measuring tIPV perpetration can only be done through social media (i.e., posting hurtful comments on social media or using information on social media to put down one's partner). Thus, the use of social media could provide more opportunities for tIPV perpetration than cell phone usage or texting alone.

Despite the focus of the current study on technology-related factors to tIPV perpetration, past research has identified an astounding variety of predictors of tIPV perpetration. Such factors include personality features such as narcissism and psychopathy (Smoker & March, 2017), low self-control and deviant peer associations (Marcum et al., 2017; Marcum, Higgins, & Poff, 2016), hostility and behavioral jealousy (Deans & Bhogal, 2017), perceived social norms of peers, endorsement of gender stereotypes (Van Ouytsel, Ponnet, & Walrave, 2017) and alcohol or drug use (Van Ouytsel et al., 2017b). While some studies apply theoretical frameworks such as social learning theory to guide their investigations, much research in this area remains atheoretical. Future research should work to develop theory in this area in order to make sense of the vast array of factors that can contribute to perpetration of tIPV, as well as their relative importance.

It is notable that, when in-person IPV perpetration was included in the current study, the effect of technology usage was no longer significant, whereas the effect of technological disinhibition remained significant. This suggests that in-person IPV perpetration remains an important predictor, although technological disinhibition may be a unique predictor as well for this form of IPV. The importance of in-person IPV aligns with both my results on victim impacts, which also primarily revealed the importance of in-person IPV, and similar results from previous research on tIPV perpetration (Borrajo, Gámez-Guadix, & Calvete, 2015; Schnurr, Mahatmya, & Basche, 2013). This also aligns with previous researchers who have found that technology provides new tools for abuse to occur, but largely does not create new aggressors (Dempsey, Sulkowski, Dempsey, & Storch, 2011; Mehari & Farrell, 2016). The importance of technological disinhibition along with in-person perpetration aligns with the I^3 theory of IPV perpetration (Finkel et al., 2012) by demonstrating the importance of some form of disinhibiting factor as a necessary precursor for abuse. Overall, these results suggest that the dangers of tIPV may lie not in creating new aggressors, but in making several forms of abuse (e.g., exercising control, psychological abuse) easier to perpetrate by providing another powerful medium through which to perpetrate such behaviors (Dunlap, 2012), as well as a disinhibiting effect that makes perpetrating such behaviors more likely (Suler, 2005). Here again, for individuals hoping to prevent tIPV, it may not be the best use of resources to focus specifically on technology-related factors (e.g., educating and discussing healthy use of technology) that may lead to tIPV perpetration, and instead to focus on educating and supporting healthy relationships overall, and maintaining a focus on traditional risk factors for IPV, including disinhibiting factors.

Due to this noted overlap between in-person and tIPV, an important challenge for future research will be to identify precisely how tIPV and in-person IPV interact. For example, one

study conceptualized cyber monitoring as a potential instigator for in-person IPV perpetration rather than solely a form of abuse in and of itself (Brem et al., 2017). Using I^3 theory (Finkel et al., 2012), these researchers conceptualized alcohol use as a disinhibitor, and cyber monitoring as an instigator, and found evidence that cyber monitoring can act as a trigger for in-person violence, specifically that alcohol use was related to in-person IPV perpetration only when high levels of cyber monitoring were also present (Brem et al., 2017). Thus, it is possible that tIPV is not only a form of abuse itself, but also feeds into and exacerbates other forms of in-person IPV. Research such as this provides a strong example of how to apply a theoretical framework to seemingly disparate perpetration-related factors to attempt to understand how various components of the individual and relationship combine to create the conditions where abuses arises.

Factor Analysis of the Cyber Aggression in Relationships Scale

In the current study, I failed to replicate the original factor structure reported for the Cyber Aggression in Relationships Scale, which was used to measure tIPV perpetration and victimization. This failure to replicate is important, as a gold standard measure for tIPV has yet to emerge, suggesting further work is needed to develop such a measure. The original scale established three subscales: (1) cyberstalking, (2) sexual tIPV, and (3) psychological tIPV (Watkins et al., 2016). The failure to replicate this structure suggests that tIPV behaviors do not split into such well-defined categories as initially thought. This could be for several reasons. First, it could be that tIPV behaviors divide in another way, such as public versus private behaviors, or by type of technology involved (e.g., texting versus social media). Second, it could be that tIPV behaviors actually represent a unified underlying construct rather than different subtypes. In this way, tIPV as a whole could be conceptualized as another form of psychological

abuse, wherein perpetrators use technology to belittle and intimidate victims using tactics that are at times sexual or related to stalking, as well as purely psychological. This seems plausible, as in-person physical and sexual IPV are differentiated from psychological due to their use of direct actions rather than words, whereas tIPV by nature uses words or indirect actions (e.g., viewing a partner's e-mail), and thus the divide between various forms of tIPV may not be as great as that between various forms of in-person IPV. Finally, as mentioned earlier, it could be that this and other measures of tIPV have failed to determine a set of items that is clearly abusive, and that there are several items in the scale that are not measuring abuse, or are interpreted by some as not measuring abuse. For example, an item such as "My partner kept tabs on my whereabouts using social media" could be interpreted as inappropriately intrusive, but could also simply be a communication device that partners use to plan or stay connected with each other's lives. Thus, it is clear that more research is needed to adequately operationalize tIPV and determine which, if any, subtypes of tIPV exist.

Limitations

Despite the many strengths of the current study, such as its use of control variables to determine unique impacts of tIPV on relationships and its focus on a particularly high-risk age group, several limitations must be noted. First, the sample was recruited from a university undergraduate population, and was predominantly female, which leads to several limitations. Although the aim of this study was to sample emerging adults, because emerging adults were only sampled from a university, it is unclear how these results would generalize to emerging adults who do not attend university. Emerging adulthood has been criticized for its focus on individuals who have a range of educational and employment opportunities, and its relative neglect of those individuals who do not have such choices, and thus may experience this

developmental period very differently (Côté & Bynner, 2008). The current study is guilty of the same assumption, failing to include participants who, for a variety of reasons (e.g., early parenthood, familial and economic constraints, disability), may not experience the same period of exploration and self-focus characteristic of emerging adulthood. It is likely that the nature of romantic relationships, technology usage, and IPV differs among these individuals, and the extent to which such individuals are affected should be a priority for future research. Although gender effects were tested in the current sample, there was not sufficient power in the current sample to detect small or medium effects among men and thus the effects reported for men should be treated with caution. Since the goal of the current study was to explore the impacts of tIPV in the emerging adult population, these results should not be taken as generalizable to other age groups, who may experience technology usage differently in their relationships. Further, the sample was restricted so that only those couples who are dating and living separately participated. One can imagine that the impacts of abuse in various forms may differ for those couples who are married or cohabiting, and who are therefore more dependent financially, and potentially socially, on their partner. The sample was additionally restricted to exclude couples who were in long-distance relationships. It could be expected that the impacts of tIPV victimization may differ among this population, as technology becomes the primary means of communication in long-distance relationships. The sample was also comprised only of those who are currently in a romantic relationship, and tIPV perpetration and victimization was reported only for the current relationship. This limitation may be especially important, as much of the danger of tIPV could come after relationship dissolution, as technology allows for continued contact after relationship dissolution has occurred, and thus specific forms of tIPV may become

more prevalent after relationship dissolution, as opposed to in-person IPV, which would necessarily end if members of the couple were no longer in each other's physical presence.

There are also limitations endemic to the methods of this study. While an anonymous online survey was utilized to maximize the amount of disclosure of IPV, there is evidence that social desirability impacts the disclosure of IPV, especially the perpetration of IPV (Sugarman & Hotaling, 1997). It is also possible that individuals did not accurately report the amount of abuse that was occurring due to an inability to remember accurately. As previously mentioned, the context and motives for various abusive behaviors were not collected in the current study. This means that the abusive behaviors reported in the survey could have been done for a variety of reasons, and this difference in motives (i.e., the result of an outburst of anger versus part of a larger pattern of control) could have masked impacts that are not necessarily uniform across couples (Whitaker, 2013). Further, there is ongoing debate about how accurate the self-reporting of technology usage is. While I was careful to use a scale that had been validated and shown to correlate with actual technology usage (Rosen et al., 2013), directly collecting data from participants' various devices on amount of usage would likely result in a more accurate report of how much technology is used. Finally, as has been noted throughout, the novelty of this research area entails that there are very few, if any, replicated well-validated and reliable measures of many important constructs in the study, such as tIPV victimization and perpetration, and technological disinhibition. While I sought to utilize measures that had a strong theoretical basis and preliminary evidence of reliability and validity, these measures do not have the empirical evidence to unequivocally support their valid measurement of constructs of interest. For example, the results in the current study did not demonstrate statistical support for a distinction between cyberstalking, sexual tIPV, and psychological tIPV, as was reported in initial scale

development (Watkins et al., 2016). Thus, it should be assumed that at least some measurement error exists in the current results.

Practical and Research Implications

The current research has several practical implications. First, as alluded to earlier, the results of the present study suggest that efforts to prevent or treat solely tIPV may be ineffectual due to the strong relationship between in-person and tIPV. Instead, it is important that practitioners conceptualize various forms of IPV as a unified whole, and work to educate individuals about healthy relationships and non-violence overall, as opposed to largely focusing on the healthy use of technology as a means of improving relationships. The practical importance of tIPV could also be in its visibility. Because a record of communication exists with technology (e.g., in text messages, on social media), tIPV is a markedly more visible form of abuse than other forms, which are more private and often a matter of one partner's story versus another. Thus, due to the noted overlap between tIPV and in-person IPV, tIPV could serve as a visible marker of IPV in relationships to identify individuals who are at risk.

There are several fruitful directions for future research. First, further investigation is needed into why the particular victim impacts identified in the current study (i.e., alcohol use for men and women, fear of partner for women) are related to tIPV victimization, while other impacts were not. These investigations should focus on potential mechanisms, such as ambiguity of communication, as well as undertake more time-sensitive analyses to determine precisely how and when these victimization experiences are related to greater alcohol use or fear of partner. Second, it is possible that certain characteristics of the individual and relationship (e.g., coping skills, type of violence) are related to the impact of tIPV victimization. Future analyses should seek to identify moderators of the relationship between tIPV victimization and various impacts to

determine if there are particular personality styles or relationship types that are particularly adversely affected by tIPV. Third, measurement and definitional issues of tIPV must be addressed by future research. This would involve a clear definition of what constitutes abuse through technology versus what does not, as well as which, if any, subtypes (e.g., cyberstalking, psychological tIPV, sexual tIPV) of tIPV exist. Fourth, due to the substantial overlap between tIPV and in-person IPV, more theoretical work is needed to integrate how these two forms of violence interact. For example, one study identified cyber monitoring as a trigger for in-person abuse (Brem et al., 2017). Further investigations into how tIPV and in-person IPV may influence each other are needed in order to adequately intervene in such relationships. Here again, time-sensitive analyses will be useful as these results would offer better chronological information about abuse and potential triggers. Fifth, future research should examine the prevalence and impact of tIPV not just in current relationships, but after relationships have ended. Because one of the unique features of technological communication is the near-constant access it gives people to each other, it could be that tIPV perpetration and victimization actually increases and becomes more impactful after relationship dissolution. Investigations in this area would have practical implications for the service needs of individuals who have recently left a relationship. Sixth, further investigations into factors related to the perpetration of tIPV should focus on theory development and integration of a broad array of previously identified tIPV perpetration factors. While some of these factors may be the same as those identified for in-person victimization, others, such as technological disinhibition, may be specific to tIPV perpetration. Further research is needed to investigate and determine precisely how such disparate factors interact and result in tIPV perpetration.

Conclusion

As the technological world continues to evolve, it will become increasingly important to explore how such evolutions affect our daily lives and relationships to each other. The aim of the current study was to examine how technology is used in IPV, specifically how such use impacts those who are victimized, and if any technology-specific factors are related to the perpetration of such abuse. While several results highlighted the importance of tIPV, such as the relationship between victimization and alcohol use, victimization and fear of partner, and technological disinhibition and tIPV perpetration, there was also ample evidence of the importance of in-person IPV. This means that, while there may be some unique features of tIPV that need to be addressed, it will be necessary to direct our attention to how in-person and technological IPV interact and potentially exacerbate each other. Additionally, due to the overlap of in-person and tIPV victimization and perpetration, the greatest need for prevention and treatment seems to remain violent relationships overall, rather than specifically the negative use of technology.

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Appendix A – Cyber Aggression in Relationships Scale

Cyber Aggression in Relationships Scale (CARS)

Instructions: No matter how well a couple gets along, there are times when they disagree or get angry or upset with each other. During these times, some couples express themselves through technology including social media (e.g., Facebook, Twitter, Instagram, blog) and cell phones (e.g., texting). We are interested in how often this happen in your relationship. Please read the list below of different things that might have happened in your relationship. Please indicate how many times you did each of these things in the **past 3 months**, and how many times your partner did them in the past 3 months. If these things did not happen in the past 3 months, but did happen before, please circle 7.

0 = this has never happened
1 = once in the past 3 months
2 = twice in the past 3 months
3 = 3-5 times in the past 3 months
4 = 6-10 times in the past 3 months
5 = 11-20 times in the past 3 months
6 = more than 20 times in the past 3 months
7 = not in the past 3 months, but it did happen before

	0	1	2	3	4	5	6	7
I used information posted on social media to put down or insult my partner.								
My partner used information posted on social media to put me down or insult me.								
I checked my partner's e-mail account to see who they were talking to or e-mailing without their permission.								
My partner checked my e-mail account to see who I was talking to or e-mailing without my permission.								
I asked my partner online for sexual information about themselves when my partner did not want to tell.								
My partner asked me online for sexual information about myself when I did not want to tell.								
I shared private or embarrassing information about my partner via text or social media without their permission.								
My partner shared private or embarrassing information about me via text or social media without my permission.								
I kept tabs on the whereabouts of my partner using social media.								
My partner kept tabs on my whereabouts using social media.								
I shared intimate or sexual information about a partner via text or social media without my partner's permission.								
My partner shared intimate or sexual information about me								

via text or social media without my permission.
I checked my partner's phone to see who they were talking to or texting without my partner's permission.
My partner checked my phone to see who I was talking to or texting without my permission.
I posted a sexually suggestive message or picture to my partner's online profile that they did not want.
My partner posted a sexually suggestive message or picture to my online profile that I did not want.
I pressured my partner to send sexual or naked photos of themselves to me.
My partner pressured me to send sexual or naked photos of myself to them.
I checked or tracked my partner's Internet activity without their permission.
My partner checked or tracked my Internet activity without my permission.
I sent threatening or harassing messages to my partner via text or social media.
My partner sent threatening or harassing messages to me via text or social media.
I wrote or posted content on social media that I knew would hurt my partner's feelings.
My partner wrote or posted content on social media that they knew would hurt my feelings.
I used my partner's social media account to view their activity without my partner's permission.
My partner used my social media account to view my activity without my permission.
I sent an explicit or sexual photo of myself to my partner when I knew my partner did not want to see it.
My partner sent an explicit or sexual photo of themselves when they knew I did not want to see it.
I sent repeated online messages or texts asking about my partner's location or activities.
My partner sent repeated online messages or texts asking about my location or activities.
I used GPS technology to track my partner's location without my partner's permission.
My partner used GPS technology to track my location without my permission.
I took information or images from my partner's phone, e-mail, or social media profile without their permission.
My partner took information or images from my phone, e-mail, or social media profile without my permission.
I tried to make my partner talk about sex online when they

did not want to.
My partner tried to make me talk about sex online when I did not want to.
I intentionally ignored my partner's phone calls or text messages to hurt my partner's feelings.
My partner intentionally ignored my phone calls or text messages in order to hurt my feelings.

Now, we want you to reflect on the technology behaviors we asked you about in **previous relationships** (i.e., not the relationship you are currently in, but any past relationships).

I have done some of these behaviors to my partner in previous relationships.

a) Yes
b) No

My partner has done some of these behaviors to me in previous relationships.

a) Yes
b) No

Appendix B - Sexual Experiences Survey

This questionnaire asks about actions you may have experienced in your relationship with your partner. Answer each item as carefully as you can.

0 = this has never happened
1 = once in the past 3 months
2 = twice in the past 3 months
3 = 3-5 times in the past 3 months
4 = 6-10 times in the past 3 months
5 = 11-20 times in the past 3 months
6 = more than 20 times in the past 3 months
7 = not in the past 3 months, but it did happen before

1. My partner misinterpreted the level of sexual intimacy I desired.
2. I misinterpreted the level of sexual intimacy my partner desired.
3. My partner became so sexually aroused that I felt it was useless to stop them even though I did not want to have sexual intercourse.
4. I became so sexually aroused that I could not stop myself even though my partner did not want to have sexual intercourse.
5. I had sexual intercourse with my partner even though I didn't really want to because my partner threatened to end our relationship otherwise.
6. My partner had sexual intercourse with me even though they didn't really want to because I threatened to end our relationship otherwise.
7. I had sexual intercourse with my partner when I didn't really want to because I felt pressured by their continual arguments.
8. My partner had sexual intercourse with me even though they didn't really want to because they felt pressured by my continual arguments.
9. My partner obtained sexual intercourse with me by saying things they didn't really mean.
10. I obtained sexual intercourse with my partner by saying things I didn't really mean.
11. My partner used some degree of physical force (e.g., twisting your arm, holding you down, etc.) to try to make me engage in kissing or petting when I didn't want to.
12. I used some degree of physical force (e.g., twisting their arm, holding them down, etc.) to try to make my partner engage in kissing or petting when they didn't want to.
13. My partner tried to get sexual intercourse with me when I didn't want to by threatening to use physical force (e.g., twisting your arm, holding you down, etc.) if I didn't cooperate, but for various reasons sexual intercourse did not occur.
14. I tried to get sexual intercourse with my partner when they didn't want to by threatening to use physical force (e.g., twisting your arm, holding you down, etc.) if they didn't cooperate, but for various reasons sexual intercourse did not occur.
15. My partner used some degree of physical force (e.g., twisting your arm, holding you down, etc.) to try to get me to have sexual intercourse with them when I didn't want to, but for various reasons sexual intercourse did not occur.
16. I used some degree of physical force (e.g., twisting your partner's arm, holding them down, etc.) to try to get my partner to have sexual intercourse with me when they didn't want to, but for various reasons sexual intercourse did not occur.

17. I had sexual intercourse with my partner when I didn't want to because they threatened to use physical force (e.g., twisting your arm, holding you down, etc.) if I didn't cooperate.
18. My partner had sexual intercourse with me when they didn't want to because I threatened to use physical force (e.g., twisting your partner's arm, holding them down, etc.) if they didn't cooperate.
19. I had sexual intercourse with my partner when I didn't want to because they used some degree of physical force (e.g., twisting your arm, holding you down, etc.).
20. My partner had sexual intercourse with me when they didn't want to because I used some degree of physical force (e.g., twisting their arm, holding them down, etc.).
21. My partner obtained sexual acts from me such as anal or oral intercourse when I didn't want to by using threats or physical force (e.g., twisting your arm, holding you down, etc.).
22. I obtained sexual acts from my partner such as anal or oral intercourse when they didn't want to by using threats or physical force (e.g., twisting your arm, holding you down, etc.).
23. I had sexual intercourse with my partner when I didn't want to because my partner made me intoxicated by giving me drugs or alcohol without my knowledge or consent.
24. My partner had sexual intercourse with me when they didn't want to because I made them intoxicated by giving them alcohol or drugs without their knowledge or consent.
25. I was incapacitated due to alcohol or drugs (that is, passed out or unaware of what was happening) and was not able to prevent unwanted sexual intercourse with my partner from taking place.
26. My partner was incapacitated due to alcohol or drugs (that is, passed out or unaware of what was happening) and they were not able to prevent unwanted sexual intercourse from taking place.

Appendix C – Stalking Victimization Questionnaire

This questionnaire asks about actions you may have experienced in your relationship with your partner. Answer each item as carefully as you can.

0 = this has never happened
1 = once in the past 3 months
2 = twice in the past 3 months
3 = 3-5 times in the past 3 months
4 = 6-10 times in the past 3 months
5 = 11-20 times in the past 3 months
6 = more than 20 times in the past 3 months
7 = not in the past 3 months, but it did happen before

1. I left my partner cards, flowers, or presents when I knew they didn't want me to.
2. My partner left me cards, letters, flowers, or presents when they knew I didn't want them to.
3. I watched or followed my partner from a distance.
4. My partner watched or followed me from a distance.
5. I approached my partner or showed up in places, such as their home, workplace, or school when they didn't want me to be there.
6. My partner approached me or showed up in places, such as my home, workplace, or school when I didn't want them to be there.
7. I left strange or potentially threatening items for my partner to find.
8. My partner left strange or potentially threatening items for me to find.
9. I sneaked into my partner's home or car and did things to scare them by letting them know I had been there.
10. My partner sneaked into my home or car and did things to scare me by letting me know they had been there.

Appendix D – Revised Online Disinhibition Scale

How strongly do you agree with the following statements?

0 = Fully disagree
1 = Somewhat disagree
2 = Neither agree nor disagree
3 = Somewhat agree
4 = Fully agree

On the Internet it is easier to open myself up to someone I have just met.
On the Internet it is easier to talk openly about my worries or troubles.
On the Internet it is easier to compliment or show affection to others without feeling shy.

On the Internet it is easier to annoy or disturb someone I don't like.
On the Internet it is easier to blame or criticize someone without fear of revenge or repercussions.
On the Internet it is easier to ridicule or make fun of someone.

Appendix E – Media and Technology Usage Scale

10-point frequency scale:
Never (0)
Once a month (1)
Several times a month (2)
Once a week (3)
Several times a week (4)
Once a day (5)
Several times a day (6)
Once an hour (7)
Several times an hour (8)
All the time (9)

Please indicate how often you do each of the following e-mail activities on any device (mobile phone, laptop, desktop, etc.)

1. Send, receive and read e-mails (not including spam or junk mail).
2. Check your personal e-mail.
3. Check your work or school e-mail.
4. Send or receive files via e-mail.

Please indicate how often you do each of the following activities on your mobile phone.

5. Send and receive text messages on a mobile phone.
6. Send and receive text messages FROM A ROMANTIC PARTNER on a mobile phone.
7. Make and receive mobile phone calls.
8. Check for text messages on a mobile phone.
9. Check for voice calls on a mobile phone.
10. Read e-mail on a mobile phone.
11. Get directions or use GPS on a mobile phone.
12. Browse the web on a mobile phone.
13. Listen to music on a mobile phone.
14. Take pictures using a mobile phone.
15. Check the news on a mobile phone.
16. Comment on news stories on a mobile phone NON-ANONYMOUSLY.
17. Comment on news stories on a mobile phone ANONYMOUSLY.
18. Record video on a mobile phone.
19. Use apps (for any purpose) on a mobile phone.
20. Search for information with a mobile phone.
21. Use your mobile phone during class or work time.

How often do you do each of the following activities?

22. Watch TV shows, movies, etc. on a TV set.
23. Watch video clips on a TV set.
24. Watch TV shows, movies, etc. on a computer.
25. Watch video clips on a website such as YouTube.
26. Watch pornography on a TV set.
27. Watch pornography on a computer or cell phone.
28. Comment on video clips on a website such as YouTube NON-ANONYMOUSLY.

29. Comment on video clips on a website such as YouTube ANONYMOUSLY.
30. Download media files from other people on a computer.
31. Share your own media files on a computer.
32. Search the Internet for news on any device (excluding mobile phones).
33. Comment on news stories on any device (excluding mobile phones) NON-ANONYMOUSLY.
34. Comment on news stories on any device (excluding mobile phones) ANONYMOUSLY.
35. Search the Internet for information on any device.
36. Search the Internet for videos on any device.
37. Search the Internet for images or photos on any device.
38. Play games on a computer, video game console, or smart phone BY YOURSELF.
39. Play games on a computer, video game console or smartphone WITH OTHERS WHO ARE IN THE SAME ROOM.
40. Play games on a computer, video game console or smartphone WITH OTHER PEOPLE ONLINE.

Do you have a social media account such as Facebook, Twitter, or Instagram? If the answer is "yes," continue with the following items. If "no," you may skip to the end of this section. How often do you do each of the following activities on social networking sites such as Facebook, Twitter, or Instagram?

41. Check your Facebook page or other social networks?
42. Check your social media from your smartphone?
43. Check social media at work or school.
44. Post status updates.
45. Post photos.
46. Browse profiles and photos.
47. Read postings.
48. Comment on postings, status updates, photos, etc., NON-ANONYMOUSLY.
49. Comment on postings, status updates, photos, etc., ANONYMOUSLY.
50. Click "Like" to a posting, photo, etc.

Appendix F – Center for Epidemiologic Studies Depression Scale

Below is a list of the ways you might have felt or behaved. Please rate how often you have felt this way during the past week.

0 = Rarely or none of the time (Less than 1 day)
1 = Some or a little of the time (1-2 days)
2 = Occasionally or a moderate amount of time (3-4 days)
3 = Most or all of the time (5-7 days)

During the past week:

1. I was bothered by things that don't usually bother me.
2. I did not feel like eating; my appetite was poor.
3. I felt that I could not shake off the blues even with help from my family or friends.
4. [a] I felt that I was just as good as other people.
5. I had trouble keeping my mind on what I was doing.
6. I felt depressed.
7. I felt that everything I did was an effort.
8. [a] I felt hopeful about the future.
9. I thought my life had been a failure.
10. I felt fearful.
11. My sleep was restless.
12. [a] I was happy.
13. I talked less than usual.
14. I felt lonely.
15. People were unfriendly.
16. [a] I enjoyed life.
17. I had crying spells.
18. I felt sad.
19. I felt that people dislike me.
20. I could not get "going."

[a] = items are reverse coded

Appendix G – Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer each question fairly quickly. That is, don't try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate. For each question choose from the following alternatives:

0. never
1. almost never
2. sometimes
3. fairly often
4. very often

1. In the last month, how often have you been upset because of something that happened unexpectedly?
2. In the last month, how often have you felt that you were unable to control the important things in your life?
3. In the last month, how often have you felt nervous and "stressed"?
4. [a] In the last month, how often have you dealt successfully with irritating life hassles?
5. [a] In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?
6. [a] In the last month, how often have you felt confident about your ability to handle your personal problems?
7. [a] In the last month, how often have you felt that things were going your way?
8. In the last month, how often have you found that you could not cope with all the things that you had to do?
9. [a] In the last month, how often have you been able to control irritations in your life?
10. [a] In the last month, how often have you felt that you were on top of things?
11. In the last month, how often have you been angered because of things that happened that were outside of your control?
12. In the last month, how often have you found yourself thinking about things that you have to accomplish?
13. [a] In the last month, how often have you been able to control the way you spend your time?
14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

[a] = items are reverse scored

Appendix H – Alcohol Use Disorders Identification Test

Please circle the answer that is correct for you.

		Never	Monthly or less	Two to four times a month	Two to three times a week	Four or more times a week
1.	How often do you have a drink containing alcohol?	0	1	2	3	4
		1 or 2	3 or 4	5 or 6	7 to 9	10 or more
2.	How many drinks containing alcohol do you have on a typical day when you are drinking?	0	1	2	3	4
		Never	Less than monthly	Monthly	Weekly	Daily or almost daily
3.	How often do you have six or more drinks on one occasion?	0	1	2	3	4
4.	How often during the last year have you found that you were not able to stop drinking once you had started?	0	1	2	3	4
5.	How often during the last year have you failed to do what was normally expected from you because of drinking?	0	1	2	3	4
6.	How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	0	1	2	3	4
7.	How often during the last year have you had a feeling of guilt or remorse after drinking?	0	1	2	3	4

8.	How often during the last year have you been unable to remember what happened the night before because you had been drinking?	0	1	2	3	4

		No	Yes, but not in the last year	Yes, during the last year
9.	Have you or someone else been injured as a result of your drinking?	0	2	4
10.	Has a relative or friend, or a doctor or other health worker been concerned about your drinking or suggested you cut down?	0	2	4

Appendix I – Fear of Partner Scale

Please circle the number that <u>best</u> describes how worried/afraid you are of your partner engaging in each of the following behaviors.

1	2	3	4	5	6	7
Not at all worried/afraid			Somewhat worried/afraid			Extremely worried/afraid

I am worried/afraid that my partner will:

1. order me around.	1	2	3	4	5	6	7
2. constantly check up on me.	1	2	3	4	5	6	7
3. control whom I socialize with.	1	2	3	4	5	6	7
4. prevent me from spending time with my friends.	1	2	3	4	5	6	7
5. prevent me from doing things I need/want to do.	1	2	3	4	5	6	7

I am worried/afraid that my partner will:

6. choke/strangle me.	1	2	3	4	5	6	7
7. punch me.	1	2	3	4	5	6	7
8. kick me.	1	2	3	4	5	6	7
9. beat me.	1	2	3	4	5	6	7

I am worried/afraid that my partner will:

10. force me to engage in unwanted sexual activity.	1	2	3	4	5	6	7
11. fondle/touch me sexually when I don't want it.							
12. force me to have oral sex.	1	2	3	4	5	6	7
13. force me to have vaginal or anal sex.	1	2	3	4	5	6	7
14. coerce/manipulate me into having sex.	1	2	3	4	5	6	7

I am worried/afraid:

15. to speak freely in front of my partner.	1	2	3	4	5	6	7
16. to express my thoughts/feelings to my partner.	1	2	3	4	5	6	7
17. to be honest with my partner.	1	2	3	4	5	6	7
18. to disagree with my partner.	1	2	3	4	5	6	7
19. to stand up for myself to my partner.	1	2	3	4	5	6	7

Appendix J – Couples Satisfaction Index

1. Please indicate the degree of happiness, all things considered, of your relationship.
    a. Extremely unhappy (0)
    b. Fairly unhappy (1)
    c. A little unhappy (2)
    d. Happy (3)
    e. Very happy (4)
    f. Extremely happy (5)
    g. Perfect (6)
2. I have a warm and comfortable relationship with my partner
    a. Not at all true (0)
    b. A little true (1)
    c. Somewhat true (2)
    d. Mostly true (3)
    e. Almost completely true (4)
    f. Completely true (5)
3. How rewarding is your relationship with your partner?
    a. Not at all (0)
    b. A little (1)
    c. Somewhat (2)
    d. Mostly (3)
    e. Almost completely (4)
    f. Completely (5)
4. In general, how satisfied are you with your relationship?
    a. Not at all (0)
    b. A little (1)
    c. Somewhat (2)
    d. Mostly (3)
    e. Almost completely (4)
    f. Completely (5)

Appendix K – World Health Organization Brief Quality of Life Assessment

The following questions ask how you feel about your quality of life, health, or other areas of your life. You are to read each question and the response options. **Please choose the answer that appears most appropriate.** If you are unsure about which response to give to a question, the first response you think of is often the best one.

Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life **in the last four weeks.**

		Very poor	Poor	Neither poor nor good	Good	Very good
1.	How would you rate your quality of life?	1	2	3	4	5
		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2.	How satisfied are you with your health?	1	2	3	4	5

The following questions ask about **how much** you have experienced certain things in the last four weeks.

		Not at all	A little	A moderate amount	Very much	An extreme amount
3.	To what extent do you feel that physical pain prevents you from doing what you need to do?	5	4	3	2	1
4.	How much do you need any medical treatment to function in your daily life?	5	4	3	2	1
5.	How much do you enjoy life?	1	2	3	4	5
6.	To what extent do you feel your life to be meaningful?	1	2	3	4	5
		Not at all	A little	A moderate amount	Very much	Extremely

7.	How well are you able to concentrate?	1	2	3	4	5
8.	How safe do you feel in your daily life?	1	2	3	4	5
9.	How healthy is your physical environment?	1	2	3	4	5

The following questions ask about how completely you experience or were able to do certain things in the last four weeks.

		Not at all	A little	Moderately	Mostly	Completely
10.	Do you have enough energy for everyday life?	1	2	3	4	5
11.	Are you able to accept your bodily appearance?	1	2	3	4	5
12.	Have you enough money to meet your needs?	1	2	3	4	5
13.	How available to you is the information that you need in your day-to-day life?	1	2	3	4	5
14.	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5
		Very poor	Poor	Neither poor nor good	Good	Very good
15.	How well are you able to get around?	1	2	3	4	5
		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
16.	How satisfied are you with your sleep?	1	2	3	4	5
17.	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5

18.	How satisfied are you with your capacity for work?	1	2	3	4	5
19.	How satisfied are you with yourself?	1	2	3	4	5
20.	How satisfied are you with your personal relationships?	1	2	3	4	5
21.	How satisfied are you with your sex life?	1	2	3	4	5
22.	How satisfied are you with the support you get from your friends?	1	2	3	4	5
23.	How satisfied are you with the conditions of your living place?	1	2	3	4	5
24.	How satisfied are you with your access to health services?	1	2	3	4	5
25.	How satisfied are you with your transport?	1	2	3	4	5

The following question refers to how often you have felt or experienced certain things in the last four weeks.

		Never	Seldom	Quite often	Very often	Always
26.	How often do you have negative feelings such as blue mood, despair, anxiety, depression?	5	4	3	2	1

Appendix L – Social Support Appraisals Scale

Below is a list of statements about your relationships with your family and friends (EXCLUDING your romantic partner). Please indicate how much you agree or disagree with each statement as being true.

0 = Strongly disagree
1 = Disagree
2 = Agree
3 = Strongly agree

	0	1	2	3
My friends respect me.				
My family cares for me very much.				
I am not important to others.				
My family holds me in high esteem.				
I am well liked.				
I can rely on my friends.				
I am really admired by my family.				
I am respected by other people.				
I am loved dearly by my family.				
My friends don't care about my welfare.				
Members of my family rely on me.				
I am held in high esteem.				
I can't rely on my family for support.				
People admire me.				
I feel a strong bond with my friends.				
My friends look out for me.				
I feel valued by other people.				
My family really respects me.				
My friends and I are really important to each other.				
I feel like I belong.				
If I died tomorrow, very few people would miss me.				
I don't feel close to members of my family.				
My friends and I have done a lot for one another.				

Appendix M - The PTSD Checklist for DSM-5

Instructions: Below is a list of problems that people sometimes have in response to a very stressful experience. Please read each problem carefully and then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

0 = Not at all
1 = A little bit
2 = Moderately
3 = Quite a bit
4 = Extremely

In the past month, how much were you bothered by:

1. Repeated, disturbing, and unwanted memories of the stressful experience?
2. Repeated, disturbing dreams of the stressful experience?
3. Suddenly feeling or acting as if the stressful experience were actually happening again (as if you were actually back there reliving it)?
4. Feeling very upset when something reminded you of the stressful experience?
5. Having strong physical reactions when something reminded you of the stressful experience (for example, heart pounding, trouble breathing, sweating?)
6. Avoiding memories, thoughts, or feelings related to the stressful experience?
7. Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)?
8. Trouble remembering important parts of the stressful experience?
9. Having strong negative beliefs about yourself, other people, or the world (for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)?
10. Blaming yourself or someone else for the stressful experience or what happened after it?
11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?
12. Loss of interest in activities that you used to enjoy?
13. Feeling distant or cut off from other people?
14. Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings for people close to you)?
15. Irritable behavior, angry outbursts, or acting aggressively?
16. Taking too many risks or doing things that could cause you harm?
17. Being “superalert” or watchful or on guard?
18. Feeling jumpy or easily startled?
19. Having difficulty concentrating?
20. Trouble falling or staying asleep?

Appendix N – Demographic Questionnaire

1. What is your current age?

2. How old is your romantic partner?

3. What is your gender?

    a. Male
    b. Female
    c. Other (please specify)

4. What is your partner's gender?
    a. Male
    b. Female
    c. Other (please specify)

5. Do you consider yourself to be:
    a. Heterosexual or straight
    b. Gay or lesbian
    c. Bisexual

6. What is the highest year of school you have completed?
    a. Grade 12
    b. One year post-secondary (trade school/college/university)
    c. Two years post-secondary (trade school/college/university)
    d. Three years post-secondary (trade school/college/university)
    e. Four years post-secondary (trade school/college/university)
    f. Five years or more post-secondary (trade school/college/university)
    g. One year masters/doctoral work
    h. Two years masters/doctoral work
    i. Three years masters/doctoral work
    j. Four years masters/doctoral work
    k. Five years masters/doctoral work
    l. Six years masters/doctoral work
    m. Seven or more years masters/doctoral work

7. What is your current occupational status?

    a. Employed full-time
    b. Employed part-time
    c. Work at home/self-employed
    d. Homemaker
    e. Student, full time
    f. Student, part time
    g. Unemployed

h. Disabled
i. Retired
j. Other (please specify)

8. If you have parent(s) and/or guardian(s), what is one of your parent's or guardian's current occupational status?
    a. Employed full-time
    b. Employed part-time
    c. Work at home/self-employed
    d. Homemaker
    e. Student, full time
    f. Student, part time
    g. Unemployed
    h. Disabled
    i. Retired
    j. Other (please specify)

9. If you have a second parent or guardian, what is their current occupational status?
    a. Employed full-time
    b. Employed part-time
    c. Work at home/self-employed
    d. Homemaker
    e. Student, full time
    f. Student, part time
    g. Unemployed
    h. Disabled
    i. Retired
    j. Other (please specify)
    k. Not applicable

10. Do you consider yourself to be a member of an Indigenous group?
    a. No
    b. Yes, First Nations
    c. Yes, Métis
    d. Yes, Inuit
    e. Yes, other Indigenous group

11. Do you consider yourself to be a member of a visible minority group (for example: Chinese Canadian, Indo-Canadian, Black Canadian, Latin Canadian)?
    a. No
    b. Yes

12. If you identify as a visible minority, please specify which group(s) you belong to.

    _____

13. How long have you been in a romantic relationship with your current partner? _____ **Years** and _____ **Months**

14. Did you and your partner meet through technology (e.g., through a dating app or website)? YES or NO

15. What was your annual **family income when you last lived at home** (i.e., the amount your parents and guardians made annually)? (If you still live at home, give current amount)

16. Are you a citizen of Canada?

    a. Yes
    b. No

17. What is your current living situation?
    a. In university residence
    b. With parent(s) or guardian(s)
    c. Off campus, with roommates
    d. Off campus, alone
    e. Living with romantic partner

18. What is your current relationship status?
    a. Married
    b. Single
    c. Dating one person, casually
    d. Dating one person, committed
    e. Dating multiple people, casually
    f. Dating multiple people, committed