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Young Adults' Perceptions of Intimate Partner Cyberstalking: Behaviors, Severity, and Associations with Depressive Symptoms and Social Isolation

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Abstract

The technology-facilitated behaviors that are considered intimate partner cyberstalking (IPC) remain unclear due to inconsistencies in the literature, and there is a lack of research examining IPC severity. This study aimed to (1) understand young adults' perceptions of IPC behaviors and severity, and (2) assess associations among IPC perceived severity, victimization frequency, depressive symptoms, and social isolation. Two phases were conducted. During Phase 1, 104 university students (ages 18–25) rated the inclusion and perceived severity of a list of potential IPC behaviors via an online survey. Qualitative responses supported their severity ratings. During Phase 2, 181 Amazon Mechanical Turk (MTurk) workers (ages 18–25) who were victims of IPC completed a second online survey. The perceived severity ratings from Phase 1 were used to operationalize the victims' severity experienced in Phase 2. Most students in Phase 1 believed multiple technology-facilitated behaviors were IPC. The most severe behavior was monitoring a partner's activities using a hidden camera. From students' qualitative responses, seven themes emerged that described the mildest behaviors, which were considered harmless and consensual. Seven themes emerged for the most severe behaviors, which were considered harmful and not consensual. As students' perceived severity of behaviors increased (Phase 1), reported victimization frequency among MTurk workers decreased (Phase 2). Phase 2 participants were more likely to experience depressive symptoms and greater social isolation when the perceived severity of IPC victimization increased. Findings provide insight into young adults' perceptions of IPC behaviors and severity. Additional research about IPC severity is encouraged to develop effective prevention strategies.

Keywords Romantic relationships · Cyberstalking · Emerging adulthood · Psychological well-being · Social well-being

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Introduction

Romantic partners often rely on technology to initiate and maintain their intimate relationship (Boyle & O'Sullivan, 2016; Papp et al., 2012; Pew Research Center, 2016), but using technology can open opportunities for intimate partner cyberstalking (IPC; Marcum et al., 2017; Smoker & March, 2017). Many young adults experience instability in romantic partnerships (Arnett, 2015) and engage in computer-mediated communication in their intimate relationships (Boyle & O'Sullivan, 2016), which could increase their risk for IPC. College-student studies have found estimates up to 36% for victimization and 67% for perpetration of various IPC behaviors (Lyndon et al., 2011; Shorey et al., 2015).

IPC is not well-understood. Definitions and measurement vary (Finn, 2004; Maple et al., 2012; Marcum et al., 2017; Reyns et al., 2012; Shorey et al., 2015; Smoker & March, 2017; United States Department of Justice, 2000), and the behaviors that are considered to be IPC are unclear because the technologies used to cyberstalk are debated (Bahm, 2003). IPC generally involves the use of the Internet and other information and communication technologies to repeatedly monitor, threaten, and/or harass a current, former, or potential romantic partner, causing them fear or concern for their safety (Bocij & McFarlane, 2002; Finn, 2004; Maple et al., 2012; Smoker & March, 2017; United States Department of Justice, 2000). Distress and alarm are also included as responses in some cyberstalking definitions (Maple et al., 2012; Worsley et al., 2017). Some college-student studies have only focused on Internet-based IPC behaviors (Acquadro Maran & Begotti, 2019; Marcum et al., 2017), and it is argued that stalking with technology beyond the Internet should not be termed "cyberstalking" (Bahm, 2003). According to Bahm (2003), the term "cyber" typically pertains to the Internet and may be expanded to include computer technology, but it does not encompass all forms of technology that may be used to stalk. Conversely, others have been more lenient with the term "cyber," and when defining cyberstalking, they have considered a wide variety of electronics that are used to stalk, such as text messaging, cameras, and location devices (e.g., Shorey et al., 2015; Smoker & March, 2017). Studies among college students and social media users have included various technologies, such as phones, texting, and tracking applications, when assessing IPC behaviors (Shorey et al., 2015; Smoker & March, 2017), thus accepting a broader definition of IPC. Similarly in a small qualitative study, college students described multiple technologies, including the Internet and other electronics, that have been used to perpetrate psychological aggression and to harass a romantic partner (Melander, 2010). However, young adults' understanding of the technology-facilitated behaviors involved in IPC remain unclear due to a lack of research investigating their perspectives of which behaviors should and should not be considered IPC.

Severity of Intimate Partner Cyberstalking

There is a lack of literature about IPC severity and its measurement. Among studies including community and college-based samples, severe forms of general cyberstalking and other unwanted pursuits have involved media platforms for verbal communication (e.g., video, phone; Barnes & Biros, 2007); monitoring and threatening acts using a cell phone, cameras, spyware, social media, email, and GPS (Dardis & Gidycz, 2017); and violation behaviors (e.g., done without consent; Cupach & Spitzberg, 2000). Severe pursuits and intrusions have occurred less frequently among college students than minor behaviors (Cupach & Spitzberg, 2000; Dardis & Gidycz, 2017), as they have been perceived as more threatening, violating, annoying, and upsetting (Cupach & Spitzberg, 2000). There is no consensus regarding the measurement of severity, but methods have included an assessment of the stalker's actions and threats and an analysis of victim advocates' case notes (Barnes & Biros, 2007); a factor analysis of pursuit behaviors that resulted in severe and minor factors (Dardis & Gidycz, 2017); the extent participants felt or would feel annoyed, upset, threatened, and their privacy violated by the behaviors (Cupach & Spitzberg, 2000); duration (Purcell et al., 2004); and experiencing multiple forms of stalking each at a high frequency (Mechanic et al., 2000). More research is necessary to clarify IPC severity and its measurement.

General Stalking Severity and Psychological and Social Health States

Given the dearth of literature about IPC severity, the associations between IPC severity and adverse health states are unclear. Among studies that combined both in-person and electronic stalking and included community-based samples of adults, victims of stalking for longer than two weeks have been more likely to relocate their residence, change their phone number, reduce social outings, and experience greater psychological morbidity compared to those who reported stalking for two weeks or less (Purcell et al., 2004). Battered women who were relentlessly stalked by an intimate partner have reported greater depression and post-traumatic stress compared to women who were infrequently stalked (Mechanic et al., 2000). Victims of severe IPC may experience similar adverse psychological and social health states.

The Present Study

It is important to understand young adults' perceptions of and experiences with IPC to effectively address this problem among the population. We defined IPC as the use of the Internet and other information and communication technologies to repeatedly monitor, threaten, and/or harass a current or former romantic partner, causing them to feel afraid, threatened, harassed, and/or distressed (Bocij & McFarlane, 2002; Finn, 2004; Maple et al., 2012; Smoker & March, 2017; Worsley et al., 2017). We

defined intimate partner according to the Centers for Disease Control and Prevention's uniform definition:

> An intimate partner is a person with whom one has a close personal relationship that may be characterized by the partners' emotional connectedness, regular contact, ongoing physical contact and sexual behavior, identity as a couple, and familiarity and knowledge about each other's lives. The relationship need not involve all of these dimensions. Intimate partner relationships include current or former: spouses (married spouses, common-law spouses, civil union spouses, domestic partners), boyfriends/girlfriends, dating partners, ongoing sexual partners. (Breiding et al., 2015, p. 11)

The study was conducted in two phases. In Phase 1, we examined young adults' perceptions of which technology-facilitated behaviors they considered to be IPC and the severity of these behaviors. To our knowledge, there is no validated tool to assess IPC experiences in a hierarchy of increasing severity. Therefore, the severity perceptions from Phase 1 were used to operationalize severity experienced in the next phase. In Phase 2, we investigated the association between perceived severity of behaviors and victimization frequency among young adults. Also, we examined perceived severity of IPC victimization experienced and its association with depressive symptoms and social isolation. Associations between demographics and perceived severity of IPC experienced were explored. We hypothesized:

H1 As the perceived severity of IPC behaviors increases, the frequency of victimization decreases.

H2 When the perceived severity of IPC victimization experienced increases, young adults are more likely to report depressive symptoms and greater social isolation.

Methods

Sampling and Recruitment

Phase 1 included a convenience sample of 104 undergraduate and graduate students at a mid-Atlantic university. Eligible participants were ages 18–25, currently and/or previously had an intimate partner (examples that were provided to participants include spouses, boyfriends/girlfriends, dating partners, and ongoing sexual partners), and were proficient in English. We recruited participants through classroom visits to four public health courses and a recruitment email. Because fewer students ages 23–25 volunteered to participate when using this strategy, we sent a recruitment email to the public health graduate student listserv to increase recruitment of these ages.

Phase 2 included a convenience sample of 181 Amazon Mechanical Turk (MTurk) workers (Amazon Mechanical Turk, 2018). MTurk is a useful and reliable tool for data collection (Buhrmester et al., 2011; Goodman et al., 2013; Mason

& Suri, 2012). Previous researchers have found similar results and psychometrics between MTurk and college-student samples in areas such as health literacy, decision-making, and personality (Buhrmester et al., 2011; Goodman et al., 2013; Nguyen et al., 2016; Paolacci et al., 2010). Eligible participants in this study were ages 18–25, located in the United States, currently and/or previously had an intimate partner, had high-quality performance statistics on MTurk (i.e., requestors approved ≥ 98% of their tasks; they completed and were approved for ≥ 500 tasks; Nguyen et al., 2016), and were victims of IPC. These victims were a subset of individuals who responded to a larger, broader survey (N = 469) that was advertised as a study examining the use of computer-based technology among intimate partners and associated health states. Therefore, they were deemed eligible for this study based on their responses to cyberstalking victimization questions that were included in the broader survey (see Methods for the cyberstalking victimization measure). Information about the study and the survey link were posted on the MTurk website. Interested participants were asked to take the survey alone in a quiet, private area. To ensure the quality of our MTurk data, we checked the dataset for suspicious and discordant responses, and none were found.

Compared to the Phase 1 sample, more participants in Phase 2 were ages 23–25, male, employed ($p < 0.025$ after Bonferroni adjustment), Non-Hispanic White, not attending school, earning $20,000 or more, and married ($p < 0.017$ after Bonferroni adjustment; see Table 1 in Results for sample characteristics).

Procedure

Phase 1 participants completed a 25-min survey online and received a $10 electronic gift card for Target. Phase 2 participants completed a 15-min survey online and were paid $3.50. After both surveys, we provided links to information about technology-facilitated stalking (National Network to End Domestic Violence, 2017; The National Center for Victims of Crime, 2011) and to resources that assist victims. These resources were offered by the university (Phase 1 only) and the National Center for Victims of Crime (The National Center for Victims of Crime, 2011). Participants provided informed consent online immediately before beginning both surveys. The university's Institutional Review Board approved both phases.

Measures

Perceptions of IPC Behaviors

We asked Phase 1 participants, "Intimate partner cyberstalking involves the use of the Internet and other information and communication technologies to repeatedly monitor, threaten, and/or harass a current, former, or potential romantic partner. Do you think any of the following behaviors are cyberstalking?" Twenty technology-facilitated behaviors were provided, including 18 items from the Controlling Partners Inventory (CPI, $\alpha = 0.90$ among college students; content and face validity were established by field experts; Burke et al., 2011; $\alpha = 0.84$ in Phase 1) and two items

that we added to increase the scope of IPC behaviors measured (i.e., checking text message and Internet search histories). We depersonalized the items from the CPI (e.g., "Using a webcam to monitor a partner's activities"). Items that addressed Facebook were generalized to any social networking site (see Table 2). Responses included 0 = "No" and 1 = "Yes." The cyberstalking definition provided to participants did not include the victim's reactions to the behaviors because we wanted to focus purely on the occurrence and minimize any bias from the participants' emotions.

IPC Perceived Severity Weights

Using a Q-sort (Barbosa et al., 1998; Stephenson, 1935, 1953), Phase 1 participants categorized these same 20 behaviors into boxes according to their beliefs about the severity of the behaviors. Seven boxes were provided, ranging from "1-Most Mild" to "7-Most Severe." Weights for each behavior were calculated by averaging the Q-sort scores. Participants also provided open-ended responses regarding why they sorted particular behaviors as "1-Most Mild" and "7-Most Severe."

IPC Victimization

In Phase 2, the same 20 behaviors were utilized, but they were personalized and included the CPI-Partner subscale ($\alpha = 0.86$ in Phase 2; e.g., "Partner used a webcam to monitor my activities;" Burke et al., 2011). Participants answered if they ever experienced the behaviors in their current or most recent (if single) intimate relationship. Seven options were provided, including the CPI's original five categories from 0 = "Never" to 4 = "4 or more times" (shortened to "4 + times"). We added 5 = "I do not use this technology" and 6 = "My partner does not use this technology." The "5 s" and "6 s" were recoded as "not applicable" (< 4% for all behaviors). Valid responses were 0–4.

Participants who answered at least "1 time" to any behavior were asked if the behavior made them feel afraid, threatened, harassed, and/or distressed. Five responses were provided, from 0 = "Not at all" to 4 = "Extremely." The data were recoded as, 0 = "No" ("Not at all") and 1 = "Yes" ("A little bit" to "Extremely"). Following studies that defined or measured cyberstalking as more than one incident (Acquadro Maran & Begotti, 2019; Maple et al., 2012; Reyns et al., 2012) that threatened and/or harassed victims and evoked fear and/or distress (Bocij & McFarlane, 2002; Finn, 2004; Maple et al., 2012; Worsley et al., 2017), participants were categorized as victims if they experienced any of the 20 behaviors repeatedly (i.e., one behavior at least twice or multiple behaviors at least one time each), which made them feel afraid, threatened, harassed, and/or distressed.

IPC Perceived Severity Experienced

The perceived severity weights from Phase 1 were applied to the IPC victimization data collected in Phase 2. A severity score was calculated by averaging the weighted

items that each participant experienced. The score ranged from 1 to 7, with higher scores indicating greater perceived severity experienced.

Depressive Symptoms

We used a short form of the Center for Epidemiologic Studies Depression Scale (CESD-10; Andresen et al., 1994) to measure depressive symptoms, which included 10 items with established convergent validity among older adults (Andresen et al., 1994) and $\alpha = 0.72$ among college students (Oppong Asante & Andoh-Arthur, 2015; $\alpha = 0.89$ in Phase 2; e.g., "During the past week…I felt depressed."). The four response options ranged from $0 =$ "Rarely or none of the time (less than 1 day)" to $3 =$ "Most or all of the time (5–7 days)." Positively worded items were reverse coded so that higher scores for all items represented greater depressive symptoms. A total scale score was calculated by adding the items (range 0–30). Using the recommended reliable and validated cut-off score for depressive symptoms (Andresen et al., 1994), the variable was coded as $0 =$ "No depressive symptoms" (score of 0–9) and $1 =$ "Depressive symptoms" (score ≥ 10). We used a binary variable because we wanted to distinguish between the presence of depressive symptoms and normal "downs" that may not be indicative of depressive symptoms.

Social Isolation

We used the Friendship Scale (Hawthorne, 2006) to measure social isolation, which included six items with established concurrent validity and $\alpha = 0.83$ among older adults (Hawthorne, 2006; $\alpha = 0.90$ in Phase 2; e.g., "During the past four weeks…I felt isolated from other people."). The five response options ranged from $0 =$ "Not at all" to $4 =$ "Almost always." Positively worded items were reverse coded so that higher scores for all items signified greater social isolation. A total scale score was calculated by adding the items (range 0–24). To our knowledge, there is no validated cut-off score for social isolation, so it was used as a continuous variable.

Demographics

The demographic variables are summarized in Table 1. Originally, gender included a "transgender" response and sexual orientation included an "unsure" response. These responses were recoded as missing and not included in the analyses because the frequencies were small (transgender, $n = 2$, 1.9% for Phase 1 and $n = 1$, 0.6% for Phase 2; unsure, $n = 4$, 3.8% for Phase 1 and $n = 0$, 0.0% for Phase 2).

Statistical Analyses

All quantitative analyses were conducted with SPSS v25. Descriptive statistics were calculated for all variables. A z-test with Bonferroni adjustment was used to explore differences in demographic proportions between our two samples. Independent t-tests and ANOVA with Bonferroni post-hoc tests were used to explore bivariate

associations between demographics (categorical independent variables, IV) and IPC perceived severity experienced (continuous dependent variable, DV). The association between IPC perceived severity weights (continuous IV) and IPC victimization frequency (continuous DV) was assessed with Pearson correlation and linear regression. Cases consisted of the IPC behaviors, and victimization frequency included the number of participants who experienced the behaviors at least twice. Because heteroskedasticity was present, a heteroskedasticity-consistent standard error estimator was applied to the regression (Hayes & Cai, 2007). The association between IPC perceived severity experienced (continuous IV) and depressive symptoms (binary DV) was examined with point-biserial correlation and logistic regression that controlled for age, gender, highest level of education, income, sexual orientation, relationship status, and hours/day in the virtual presence of others (i.e., in a social setting via technology, such as a cell phone call, video chat, or online messaging). The association between IPC perceived severity experienced (continuous IV) and social isolation (continuous DV) was assessed with Pearson correlation and linear regression with the same control variables. Significance for analyses with Bonferroni adjustment was $p < 0.025$ for two pairwise comparisons and $p < 0.017$ for three pairwise comparisons. Otherwise, significance was $p < 0.05$ and 95% confidence intervals for odds ratios not including one. Assumptions for analyses were satisfied except when noted.

Thematic analysis was conducted using NVivo 12 to identify themes from Phase 1 participants' open-ended responses regarding why they rated IPC behaviors as the mildest or the most severe. Themes were determined for the mildest and most severe behaviors separately. We followed qualitative analytic steps provided by Braun and Clarke (Braun & Clarke, 2006). Driven by the data, codes were generated across all IPC behaviors and grouped into emergent themes. Themes were reviewed, refined, and defined. Two coders were used, and the inter-rater reliability was 92% agreement. Differences in coding were discussed until consensus was reached. Furthermore, we determined the percentage of participants that provided responses for each theme.

Missing Data

Nonresponse missing data in Phase 1 included age (3.8%), race/ethnicity (1.0%), annual income (1.9%), parental income (1.0%), and perceptions of IPC behaviors (1.0% for two behaviors). Nonresponse missing data in Phase 2 included race/ethnicity (2.2%), relationship length (0.6%), virtual presence (0.6%), depressive symptoms (3.3%), and social isolation (5.0%). Using chi-square tests, nonresponse missing data for social isolation and virtual presence were associated with gender and relationship status, respectively ($p < 0.05$). No other associations were found for unanswered missing data. Because missing data for some variables may be explained by observed data, as noted, we assumed missing at random and used multiple imputation to handle nonresponse missing data for Phase 2. Age, gender, race/ethnicity, highest level of education, income, sexual orientation, relationship status, relationship length, and virtual presence were used as predictors to impute social isolation,

depressive symptoms, and demographic variables with missing data. Forty imputations were generated (Graham et al., 2007) and averaged to create the final imputed value. Data that were provided and recoded as missing or not applicable, as noted above (i.e., responses for transgender, unsure of sexual orientation, and not using the technology included in the IPC victimization items), were not imputed. Unanswered missing data for Phase 1 were not imputed because these data were only used for descriptive analyses.

Results

Descriptive Statistics and Demographic Differences with IPC Perceived Severity Experienced

Table 1 includes descriptive statistics for Phase 1 and Phase 2. Among Phase 2 participants, the mean scores for IPC perceived severity experienced and social isolation were 3.46 (SD=0.61) and 9.90 (SD=5.99), respectively. Over half of these MTurk workers indicated depressive symptoms (n=106, 58.6%). Male MTurk workers experienced greater perceived severity of IPC victimization compared to females ($p < 0.05$, Cohen's d=0.33; see Table 1). However, Levene's test for equality of variances was significant ($p < 0.05$), so these results were based on equal variances not assumed. No other demographics were significantly associated with IPC perceived severity experienced.

Perceived Severity Weights, Perceptions of IPC Behaviors, and Prevalence of Victimization

Monitoring a partner with a hidden camera received the most severe weight in Phase 1 and was the least common behavior experienced at least twice in Phase 2 (see Table 2). The majority of Phase 1 participants thought each technology-facilitated behavior was cyberstalking (see Table 2).

Themes Describing the Mildest and Most Severe Behaviors

In general, the majority of themes that emerged for the mildest and most severe behaviors related to the dynamics of the romantic relationship, the harm done to the victim, and perceived social norms among young adults. We identified seven themes from Phase 1 participants' qualitative responses that described the mildest behaviors (see Table 3). Students believed that checking behaviors, monitoring location, and excessive/threatening communication were the mildest forms of cyberstalking because (1) they were considered harmless but unhealthy (i.e., they do not directly hurt the partner but may be inappropriate behavior in the relationship); (2) they may be justified by positive intentions (e.g., young adults may check on their partner to ensure they are safe or they may excessively call them because they are more attentive); (3) respondents indicated a distinction between public and private information (e.g., a partner may choose

Table 1 Participant characteristics and associations with intimate partner cyberstalking (IPC) perceived severity experienced

Characteristics	Phase 1-student N=104	Phase 2-Amazon Mechanical Turk N=181	Phase 2-IPC perceived severity experienced (victimization)	
	n (%)	n (%)	Mean (SD)	t-test/ANOVA statistic, p
Age				$t(179)=0.352$, $p=0.725$
18–22	68 (68.0)[a]	63 (34.8)[b]	3.48 (0.64)	
23–25	32 (32.0)[a]	118 (65.2)[b]	3.44 (0.60)	
Gender				$t(159)=2.186$, $p=0.030$[c] *
Male	17 (16.7)[a]	79 (43.9)[b]	3.56 (0.64)	
Female	85 (83.3)[a]	101 (56.1)[b]	3.36 (0.58)	
Race/ethnicity				$F(2,178)=1.218$, $p=0.298$
Non-Hispanic white	44 (42.7)[a]	112 (61.9)[b]	3.43 (0.66)	
Non-Hispanic other	45 (43.7)[a]	46 (25.4)[b]	3.43 (0.52)	
Hispanic/Latinx	14 (13.6)	23 (12.7)	3.64 (0.57)	
Current grade level				$F(2,178)=0.135$, $p=0.874$
Undergraduate student	69 (66.3)[a]	73 (40.3)[b]	3.48 (0.69)	
Graduate student[d]	35 (33.7)[a]	15 (8.3)[b]	3.39 (0.52)	
Not attending school	0 (0.0)[a]	93 (51.4)[b]	3.45 (0.57)	
Highest level of education				$t(179)=0.984$, $p=0.326$
No college degree	–	81 (44.8)	3.51 (0.65)	
College degree (associate's or higher)	–	100 (55.2)	3.41 (0.58)	
Employed-yes	69 (66.3)[a]	181 (100.0)[b]	–[e]	–[e]
Annual income				$F(2,178)=0.346$, $p=0.708$
$19,999 or less	73 (71.6)[a]	67 (37.0)[b]	3.44 (0.61)	
$20,000–$39,999	16 (15.7)[a]	63 (34.8)[b]	3.50 (0.62)	
$40,000 or more	13 (12.7)[a]	51 (28.2)[b]	3.41 (0.62)	

Table 1 (continued)

Characteristics	Phase 1-student N=104	Phase 2-Amazon Mechanical Turk N=181	Phase 2-IPC perceived severity experienced (victimization)	
	n (%)	n (%)	Mean (SD)	t-test/ANOVA statistic, p
Parental income				
$59,999 or less	15 (14.6)	–	–	–
$60,000–$99,999	23 (22.3)	–	–	–
$100,000 or more	65 (63.1)	–	–	–
Sexual orientation				$t(179) = -1.602, p=0.111$
Heterosexual	87 (87.0)	150 (82.9)	3.42 (0.60)	–
Gay, lesbian, or bisexual	13 (13.0)	31 (17.1)	3.62 (0.65)	–
Relationship status				$F(2,178)=1.210, p=0.301$
Single	29 (27.9)[a]	23 (12.7)[b]	3.61 (0.64)	
Dating or engaged[f]	72 (69.2)	127 (70.2)	3.45 (0.62)	
Married	3 (2.9) [a]	31 (17.1) [b]	3.35 (0.56)	
Relationship length				$F(2,178)=0.351, p=0.704$
12 months or less	–	43 (23.8)	3.52 (0.68)	
13–36 months	–	70 (38.7)	3.42 (0.63)	

Table 1 (continued)

Characteristics	Phase 1-student N = 104	Phase 2-Amazon Mechanical Turk N = 181	Phase 2-IPC perceived severity experienced (victimization)	
	n (%)	n (%)	Mean (SD)	t-test/ANOVA statistic, p
37 months or longer	–	68 (37.6)	3.44 (0.55)	
Hours per day in the virtual presence of others[g]				$F_{(2,178)} = 0.299, p = 0.742$
3 h or less	–	62 (34.3)	3.43 (0.66)	
4–7 h	–	63 (34.8)	3.50 (0.64)	
8 h or more	–	56 (30.9)	3.43 (0.54)	

Age, race/ethnicity, annual income, parental income, and sexual orientation had < 4% missing for Phase 1. Gender had < 2% missing for both phases

[a,b]Significant difference in proportions by row (i.e., between phases/samples) using a z-test with Bonferroni adjustment (after correction, $p < 0.025$ for two pairwise comparisons and $p < 0.017$ for three pairwise comparisons)

[c]Levene's test for equality of variances was significant ($p < 0.05$), so results were based on equal variances not assumed

[d]Includes professional school for Phase 2

[e]A bivariate test with IPC perceived severity experienced was not conducted because all MTurk workers were employed

[f]Includes n = 1 divorced individual who was currently dating

[g]In a social setting via technology, such as a cell phone call, video chat, or online messaging

– Data not available

[*] $p < 0.05$

Table 2 Perceived severity weights, perceptions of intimate partner cyberstalking (IPC) behaviors, and prevalence of behaviors experienced at least twice (2+)

Behaviors	Phase 1	Phase 2	
	Perceived severity weights	Yes, this is IPC N=104	Victimization experienced 2+ times N=181
	Mean (SD)	%	%
Using a hidden camera to monitor a partner's activities	6.94 (0.23)	96.2	5.0
Using spyware to monitor a partner's activities	6.91 (0.32)	97.1	5.5
Using a webcam to monitor a partner's activities	6.77 (0.69)	94.2	5.5
Posting inappropriate photos of a partner on a social networking site	6.58 (0.81)	92.3	6.6
Threatening to post inappropriate photos of a partner on a social networking site	6.24 (0.88)	92.3	11.1
Making embarrassing, insulting, or threatening social network posts about a partner	6.08 (1.05)	90.4	12.7
Making threatening cell phone calls to a partner	5.87 (1.31)	94.2	11.6
Sending threatening texts to a partner	5.83 (1.25)	93.3	20.4
Sending threatening emails to a partner	5.61 (1.46)	94.2	8.8
Using GPS or social media "check-ins" to monitor a partner's location	4.53 (2.03)	68.0 [a]	19.3
Using a partner's password to check up on them	4.32 (1.43)	88.5	17.1
Making an excessive number of cell phone calls to a partner	3.47 (1.56)	73.1	36.5
Sending an excessive number of emails to a partner	3.42 (1.65)	73.1	10.5
Sending an excessive number of texts to a partner	3.16 (1.58)	63.5	39.8
Checking a partner's cell phone bill	3.01 (1.52)	65.4	8.8
Checking a partner's sent/received text message history	2.96 (1.47)	75.0	53.6
Checking a partner's Internet search history	2.85 (1.49)	79.8	22.1
Checking a partner's sent/received cell phone call history	2.75 (1.38)	72.1	38.1
Checking a partner's sent/received email history	2.68 (1.48)	75.0	24.9
Checking a partner's social network page to monitor them	2.63 (1.55)	61.2 [a]	33.2

[a] 1% missing

Table 3 Themes describing the mildest cyberstalking behaviors

Themes	Contextual details	Relevant behaviors	Quotes
Harmless but unhealthy (stated by 44.2% of participants)	–Not directly causing harm –Only checking/investigating –Just curious –Not threatening or violating –Unhealthy behavior in the relationship; inappropriate and breaks trust, but not as hurtful as other behaviors	–Checking social network page –Checking email, text message, cell phone call, and Internet search histories	–"This [checking Internet search history] will most likely not lead to violence or harm the mental health of the individual." –"Just checking [email history]—not causing harm." –"Although it [checking cell phone call history] will break the partner's trust, it is not on the same level as other stalking or harassing behaviors."
Justified by positive intentions (stated by 26.0% of participants)	–May be worried about their partner and want to ensure they are okay –May want to ensure that they arrived at their destination safely –May check their cell phone bill for financial reasons –May be more attentive to their partner	–Using GPS or social media "check-ins" –Checking cell phone bill –Sending/making excessive emails, text messages, and cell phone calls	–"… 'checking-in' on someone's location … could be done in a healthy context of seeing where a partner is in their drive on their way somewhere, or checking to make sure they got where they are going." –"…checking a phone bill could be an action that is strictly for financial purposes. If you're married and check your spouse's phone bill to make sure everything is in order." –"Depending on the partner, some are just more attentive." [excessive cell phone calls]

Table 3 (continued)

Themes	Contextual details	Relevant behaviors	Quotes
Public vs. private information (stated by 18.3% of participants)	–Victim chooses to post information and location on social media for public to see –Internet search history may be visible to partners who share a computer (i.e., seen without searching for it) –Cell phone call history is not generally publicized	–Checking social network page –Checking cell phone call and Internet search histories –Using GPS or social media "check-ins"	–"The content available on a social network page has been posted for people to see and it isn't necessarily intrusive to view content that a person chose to make available." –"It [Internet history] may be left out like on a computer y'all share." –"…although it [checking cell phone call history] is an invasion of privacy, it doesn't go public."
Common/normal (stated by 15.4% of participants)	–Common among young adults, partners in untrusting relationships (i.e., does not trust partner to be faithful), and partners in serious/ committed relationships –Normal in this age of technology –Societal norms involve constantly updating one's status	–Checking social network page and cell phone bill –Checking email, text message, cell phone call, and Internet search histories	–"…this [checking a partner's social network page] is wildly common among most people between the ages of 18–25. People joke about 'stalking' people's social media pages, but in reality, we all do it." –"Many people do this [checking a partner's social network page] because of society and the 'constant updating' norms." –"Texts are often shared anyways…" –"If the partners are living together, checking a cell phone bill is a normal thing."

Table 3 (continued)

Themes	Contextual details	Relevant behaviors	Quotes
Consensual (stated by 12.5% of participants)	–May consent to monitor each other –Victim is aware of the monitoring –Shared based on mutual trust	–Checking cell phone bill –Using a partner's password –Checking email, text message, cell phone call, and Internet search histories –Using GPS or social media "check-ins"	–"My partner and I have always been open with our calls and texts…we have both consented to this kind of 'monitoring.'" –"…it [checking text message history] is not monitoring what your partner is doing at all times when he does not know." –"When two people live together, things like Internet search history are … shared out of mutual trust."
Easily ignored or blocked (stated by 9.6% of participants)	–Can block the number –Do not have to answer/ respond	–Sending/making excessive emails, text messages, and cell phone calls –Sending/making threatening emails, text messages, and cell phone calls	–"…they always have the option to block the number. They also have the option of whether or not they want to answer the phone call." –"They also have the option to respond to the email or not."
Personal experience with perpetration (stated by 6.7% of participants)	–Not a big deal to those who engage in the behavior	–Checking social network page –Checking cell phone call and text message histories –Sending excessive text messages	–"This [checking cell phone call history] is no big deal, I do this." –"I know I personally am guilty of sending my partner many, many texts in a row, but not in a controlling or obsessive way, or in a way to elicit a response. I send many texts throughout the day to jot down things to talk about later, or just funny/cute memes…"

Results are from Phase 1 (N = 104). Themes were identified using thematic analysis

Table 4 Themes describing the most severe cyberstalking behaviors

Themes	Contextual details	Relevant behaviors	Quotes
Invasion of privacy (stated by 67.3% of participants)	–Privacy compromised –Private, sensitive information becomes public (personal information and relationship issues)	–Checking cell phone bill –Checking email, cell phone call, and text message histories –Using a partner's password –Making embarrassing, insulting, or threatening social network posts –Posting inappropriate photos –Using GPS or social media "check-ins" –Using a webcam, hidden camera, and spyware	–"It's [checking cell phone call history] an invasion of privacy." –"Texts these days are more personal than call logs for this generation of millennials. It's not appropriate to check their texts." –"Posting inappropriate photos is a major violation of privacy just like posting embarrassing, insulting, or threatening things about a partner." –"Monitoring their partner's location is a violation of privacy, and they have no business knowing where their partner is."
Impacting the victim's physical, mental, social, academic, and economic health (stated by 59.6% of participants)	–May cause mental and emotional distress, provoke fear, and lower self-esteem –May harm physical safety, reputation, relationships with others, intimate relationship with partner, academics, and career/professional life –May not be able to flee relationship with partner if their location is tracked	–Sending/making threatening emails, text messages, and cell phone calls –Making embarrassing, insulting, or threatening social network posts –Threatening to post inappropriate photos –Posting inappropriate photos –Using a webcam, hidden camera, and spyware –Using GPS or social media "check-ins"	–"...for the partner receiving the [threatening] email, it can affect their mental health." –"Sending direct threats, no matter what form (email, text, or phone call) … will evoke fear in the person that receives them." –"It [making embarrassing, insulting or threatening posts] can hurt the person's career and personal relationships and cause them stress."

Table 4 (continued)

Themes	Contextual details	Relevant behaviors	Quotes
Intentionally harmful (stated by 50.0% of participants)	–Purposefully harming their partner –Perpetrator is aware of their intention to harm	–Making embarrassing, insulting, or threatening social network posts –Threatening to post inappropriate photos –Posting inappropriate photos	–"The action itself [making embarrassing, insulting, or threatening posts] is malicious, and it is clear that the person making the embarrassing, etc. posts is intentionally trying to damage their partner's reputation." –"You are actually doing something [posting inappropriate photos] to actively harm the person."
Not consensual (stated by 32.7% of participants)	–Conducted without permission –Victim may be unaware of the monitoring	–Making embarrassing, insulting, or threatening social network posts –Posting inappropriate photos –Using GPS or social media "check-ins" –Using a webcam, hidden camera, and spyware	–"Actively posting content about a partner without their permission is never okay to do." –"This [using a webcam] is extreme stalking as they are unaware of you watching them."
Illegal (stated by 26.9% of participants)	–Involves criminal activity	–Sending/making threatening emails, text messages, and cell phone calls –Threatening to post inappropriate photos –Posting inappropriate photos –Using a webcam, hidden camera, and spyware	–"Most illegal or criminal activity." [posting inappropriate photos] –"This can also be called revenge porn and is illegal in some states." [posting inappropriate photos] –"Against the law." [using a webcam]
Leading to other forms of abuse (stated by 8.7% of participants)	–May lead to violence, physical or sexual abuse, cyberbullying, harassment, and revenge porn	–Sending/making threatening emails, text messages, and cell phone calls –Making embarrassing, insulting, or threatening social network posts –Threatening to post inappropriate photos –Posting inappropriate photos	–"[Sending threatening emails] may forecast to future physical or sexual abuse." –"…it [threatening texts] can potentially lead to a violent situation." –"…it [embarrassing, insulting, or threatening posts] invites the other problems that come with social media like cyberbullying."

Table 4 (continued)

Themes	Contextual details	Relevant behaviors	Quotes
Uncommonly used technology (stated by 3.8% of participants)	–Email is not commonly used among young adults except for school or work, so using it to cyberstalk requires effort	–Checking email history –Sending threatening and excessive emails	–"People don't usually use email any-more, so to go to that extreme and that energy to check email is borderline crazy." –"Email is not used often so it's very much going out of your way to see what they're doing on e-mail."

Results are from Phase 1 (N = 104). Themes were identified using thematic analysis

to make certain information public on social media or partners may share a computer); (4) these behaviors were considered common/normal among young adults in untrusting (i.e., does not trust partner to be faithful) and serious/committed relationships and in this social media era; (5) partners may consent to these behaviors; (6) excessive and threatening texts/calls/emails can be ignored or blocked on phones and computers; and (7) the actions were not considered serious to those who have perpetrated the behaviors.

We identified seven themes from Phase 1 participants' qualitative responses that described the most severe behaviors (see Table 4). Students considered checking, location monitoring, surveillance, threatening, and inappropriate behaviors as the most severe forms of cyberstalking because (1) they invade the partner's privacy; (2) they can impact the partner's physical, mental, social, academic, and economic health; (3) they are conducted to intentionally harm the partner; (4) partners may not consent to these behaviors; (5) they involve illegal activity; (6) they may be a precursor to other forms of abuse, such as physical or sexual abuse; (7) and they may involve technology, particularly email, that is not commonly used among young adults other than for work or school. For both mild and severe behaviors, some participants commented that the victim's perceptions of the behaviors are subjective.

Hypothesis 1

Supporting Hypothesis 1 (as the perceived severity of IPC behaviors increases, the frequency of victimization decreases), the perceived severity weights from Phase 1 were negatively correlated with victimization frequency in Phase 2 ($r = -0.72$, $p < 0.001$). As the perceived severity weights increased by one unit, victimization frequency decreased by approximately 11 participants ($p < 0.001$; see Table 5).

Hypothesis 2

The results support Hypothesis 2 (when the perceived severity of IPC victimization experienced increases, young adults are more likely to report depressive symptoms and greater social isolation). The perceived severity of IPC victimization experienced among Phase 2 participants was positively correlated with depressive symptoms ($r_{pb} = 0.26$, $p < 0.001$) and social isolation ($r = 0.36$, $p < 0.001$). After controlling for demographics (i.e., age, gender, highest level of education, income, sexual orientation, relationship status, and hours/day in the virtual presence of others), Phase 2 participants were more likely to indicate depressive symptoms and greater social isolation when the perceived severity of IPC victimization experienced increased by one unit ($p < 0.001$, see Tables 5 and 6).

Discussion

The young adults in this study thought IPC involved various technology-facilitated behaviors. Their perceptions support a broad definition of IPC and are consistent with studies that assessed IPC with technologies besides the Internet

Table 5 Linear regression analyses with intimate partner cyberstalking (IPC) perceived severity weights, victimization frequency, perceived severity experienced, and social isolation

Independent variable	Dependent variable	b (SE)	t	B	p	Model
IPC perceived severity weights[a]	Victimization frequency	− 10.95 (2.48)	− 4.41	− 0.72	0.000*	$F_{(1,18)} = 19.43$, $p = 0.000*$, $R^2 = 0.52$, adjusted $R^2 = 0.49$
IPC perceived severity experienced (victimization)[b]	Social isolation	3.50 (0.69)	5.08	0.36	0.000*	$F_{(11,168)} = 3.99$, $p = 0.000*$, $R^2 = 0.21$, adjusted $R^2 = 0.16$

[a]Cases included the 20 IPC behaviors measured, and victimization frequency included the number of participants who experienced the behavior at least twice. A heteroskedasticity-consistent standard error estimator was applied

[b]Model controlled for age, gender, highest level of education, income, sexual orientation, relationship status, and hours/day in the virtual presence of others

*$p < 0.001$

Table 6 Logistic regression analysis with intimate partner cyberstalking (IPC) perceived severity experienced and depressive symptoms

Independent variable	Dependent variable	b (SE)	p	OR (95% CI)	−2 Log Likelihood (LL), Nagelkerke R^2
IPC perceived severity experienced (victimization)	Depressive symptoms	1.23 (0.33)	0.000*	3.43 (1.79–6.56)*	−2 LL = 204.96, R^2 = 0.27

Model controlled for age, gender, highest level of education, income, sexual orientation, relationship status, and hours/day in the virtual presence of others

*$p < 0.001$ and 95% CI not including 1

(Shorey et al., 2015; Smoker & March, 2017). These results suggest that IPC is perceived to be a complex issue that cannot be measured with one technology or behavior. Their perceptions may be influenced by advancements in technology, which enable individuals to quickly and easily monitor and harass their partners via multiple devices and applications (Melander, 2010). Young adults' perceptions of IPC may continue to evolve as new technologies are developed.

Consistent with the cyberstalking literature (Barnes & Biros, 2007), threatening cell phone calls (i.e., verbal communication) received a slightly higher perceived severity weight than threatening texts and emails (i.e., text communication). Threatening behaviors and monitoring partners via cameras and spyware received the highest perceived severity weights, which were similar to severe cyber pursuit behaviors (Dardis & Gidycz, 2017). Additionally, our results support literature indicating that violation-related intrusion behaviors (e.g., done without consent) are the most severe (Cupach & Spitzberg, 2000). Based on the themes that were generated, behaviors are perceived to be more severe when the perpetrator's intentions are harmful, the victim's health is negatively impacted, and their privacy is violated. These results are consistent with literature assessing severity based on the extent participants felt or would feel annoyed, upset, threatened, and their privacy violated by the behaviors (Cupach & Spitzberg, 2000).

According to a previous study, female college students were more likely to be victims of technological dating abuse compared to males (Burke et al., 2011). However, when severity is taken into account, we found that males experienced greater perceived severity of IPC than females. Our results are consistent with another study examining severe cyber psychological abuse among college students in romantic relationships (Leisring & Giumetti, 2014). Given the limited literature investigating IPC severity, this gender-severity relationship deserves further exploration in order to clarify high-risk groups that need attention when developing and implementing IPC prevention strategies. Research that has consistently identified a particular gender or genders (e.g., female, male, transgender, non-binary, etc.) that has/have experienced greater IPC severity compared to other genders could provide insight into which gender groups require targeted prevention programs.

As hypothesized (H1), the perceived severity weights increased as victimization frequency decreased. Therefore, behaviors that were perceived to be more severe were less common. Similarly, severe in-person and cyber pursuits and intrusions among college students have occurred less frequently than minor behaviors (Cupach & Spitzberg, 2000; Dardis & Gidycz, 2017). According to the themes that emerged, mild behaviors may be more frequent because they can be justified by positive intentions and are considered harmless, consensual, and normal among partners. Severe behaviors may be less frequent because they are damaging, illegal, not consensual, and may include uncommonly used technology.

As hypothesized (H2), participants were more likely to experience depressive symptoms and greater social isolation when the perceived severity of IPC victimization increased. These results support findings from stalking studies (Mechanic et al., 2000; Purcell et al., 2004). Victims of greater severity may experience lower mood, increased helplessness, and less control over the situation, which could be associated with their depressive symptoms (Worsley et al., 2017). They may also be more likely

to experience social isolation due to a lack of interest in socializing when feeling disheartened and anxious about the situation and distrusting others after the incident (Worsley et al., 2017). Additionally, they may curtail their use of social media and other technology (Worsley et al., 2017), or their partner may control their network of friends (Melander, 2010).

Strengths and Limitations

This study was the first, to our knowledge, to (1) have young adults identify IPC from a list of potential behaviors; (2) measure perceived IPC severity via a Q-sort; and (3) apply severity perceptions to understand the relationships between IPC severity experienced and health states. Also, we included a larger sample size than traditional Q-sorts (Brown, 1980; Dziopa & Ahern, 2011). However, the study utilized two different samples, which were demographically disparate. Both phases were cross-sectional, and the results can only suggest associations, not causality. The questions assessing depressive symptoms and social isolation were not asked as direct outcomes of IPC, so it is uncertain whether they resulted from IPC. Furthermore, it is unclear if the victims experienced in-person stalking or other forms of intimate partner abuse in addition to IPC. Although a next step for our analysis could be to explore social isolation as a mediator in the pathway between IPC perceived severity experienced and depressive symptoms or to investigate depressive symptoms as a mediator in the pathway between IPC perceived severity experienced and social isolation, the overlapping timeframes of the depressive symptoms and social isolation measures, their bidirectional relationship (Cacioppo & Hawkley, 2009; Elmer & Stadtfeld, 2020), and a lack of theoretically-sound instrumental variables limited the opportunity to appropriately explore these mediation relationships. Because data were self-reported, there may be social desirability bias present. The resulting odds ratio from the logistic regression analysis with depressive symptoms had a rather large confidence interval, indicating increased uncertainty of this estimate. A larger sample may be needed. The low sample sizes for some demographic groups limited the power to detect significant differences when exploring associations between these demographic variables and IPC perceived severity experienced, further supporting the need for a larger sample. Both phases included convenience samples and cannot be generalized to all young adults ages 18–25 who have ever had an intimate partner. Because students in Phase 1 were recruited from public health classes, they may be more health-conscious than other young adults. Additionally, the MTurk workers in Phase 2 may be more susceptible to IPC because they work virtually and may be more tech-savvy.

Implications and Future Direction

The results from this study enhance our understanding of young adults' perceptions of IPC behaviors and the severity of these behaviors. We captured their thoughts about severity quantitatively and qualitatively, which enabled us

to contextualize IPC perceived severity. Future research should utilize mixed-method approaches to further explain the dynamics surrounding IPC risk and prevention. Based on young adults' perceptions of IPC behaviors, future research should include a variety of technology-facilitated behaviors in their measurement of IPC and utilize a standardized definition of IPC that incorporates multiple technologies. Furthermore, their perceptions of severity inform potential methods for assessing severity in future studies. Young adults' thoughts about IPC behaviors and severity can inform prevention strategies to address IPC among this population.

The results from this study increase our knowledge of psychological and social health states associated with IPC perceived severity. Future research should continue to investigate the epidemiology surrounding IPC severity, such as further exploration of prevalence estimates, risk factors, and high-risk groups. Additionally, more research is necessary to comprehend mediators and moderators in the relationships between IPC severity and adverse health states. Once we gain a better understanding of the epidemiology of severity and associated mechanisms, the results can be used to develop effective policies and programs to prevent IPC among young adults.

Declarations

Conflicts of interest The authors have no relevant financial or non-financial interests to disclose.

Informed consent Informed consent was obtained from all participants included in both phases of the study.

Ethical Approval The university's Institutional Review Board approved Phases 1 and 2 of this study.

References

Acquadro Maran, D., & Begotti, T. (2019). Prevalence of cyberstalking and previous offline victimization in a sample of Italian university students. *Social Sciences, 8*, 1–10. https://doi.org/10.3390/socsci i8010030

Amazon Mechanical Turk. (2018). FAQs. https://www.mturk.com/worker/help.

Andresen, E. M., Malmgren, J. A., Carter, W. B., & Patrick, D. L. (1994). Screening for depression in well older adults: Evaluation of a short form of the CES-D. *American Journal of Preventive Medicine, 10*(2), 77–84. https://doi.org/10.1016/S0749-3797(18)30622-6

Arnett, J. J. (2015). A longer road to adulthood. In J. J. Arnett (Ed.), *Emerging adulthood: The winding road from the late teens through the twenties* (2nd ed., pp. 1–29). Oxford University Press.

Bahm, T. (2003). Eliminating "cyber-confusion". The Source, 3(2). https://victimsofcrime.org/docs/src/elimi nating-cyber-confusion.pdf?sfvrsn=2.

Barbosa, J. C., Willoughby, P., Rosenberg, C. A., & Mrtek, R. G. (1998). Statistical methodology: VII. Q-methodology, a structural analytic approach to medical subjectivity. *Academic Emergency Medicine, 5*(10), 1032–1040. https://doi.org/10.1111/j.1553-2712.1998.tb02786.x

Barnes, S., & Biros, D. (2007). An exploratory analysis of computer mediated communications on cyberstalking severity. *Journal of Digital Forensics Security and Law, 2*(3), 7–27. https://doi.org/10.15394/jdfsl.2007.1025

Bocij, P., & McFarlane, L. (2002). Online harassment: Towards a definition of cyberstalking. *Prison Service Journal, 139*, 31–38.

Boyle, A. M., & O'Sullivan, L. F. (2016). Staying connected: Computer-mediated and face-to-face communication in college students' dating relationships. *Cyberpsychology, Behavior, and Social Networking, 19*(5), 299–307. https://doi.org/10.1089/cyber.2015.0293

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*, 77–101. https://doi.org/10.1191/1478088706qp063oa

Breiding, M. J., Basile, K. C., Smith, S. G., Black, M. C., & Mahendra, R. (2015). Intimate partner violence surveillance: Uniform definitions and recommended data elements, Version 2.0. Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, Division of Violence Prevention. https://www.cdc.gov/violenceprevention/pdf/intimatepartnerviolence.pdf.

Brown, S. R. (1980). *Political subjectivity: Applications of Q methodology in political science*. Yale University Press.

Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's mechanical turk: A new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science, 6*(1), 3–5. https://doi.org/10.1177/1745691610393980

Burke, S. C., Wallen, M., Vail-Smith, K., & Knox, D. (2011). Using technology to control intimate partners: An exploratory study of college undergraduates. *Computers in Human Behavior, 27*(3), 1162–1167. https://doi.org/10.1016/j.chb.2010.12.010

Cacioppo, J. T., & Hawkley, L. C. (2009). Perceived social isolation and cognition. *Trends in Cognitive Sciences, 13*(10), 447–454. https://doi.org/10.1016/j.tics.2009.06.005

Cupach, W. R., & Spitzberg, B. H. (2000). Obsessive relational intrusion: Incidence, perceived severity, and coping. *Violence and Victims, 15*(4), 357–372. https://doi.org/10.1891/0886-6708.15.4.357

Dardis, C. M., & Gidycz, C. A. (2017). The frequency and perceived impact of engaging in in-person and cyber unwanted pursuit after relationship break-up among college men and women. *Sex Roles, 76*(1–2), 56–72. https://doi.org/10.1007/s11199-016-0667-1

Dziopa, F., & Ahern, K. (2011). A systematic literature review of the applications of Q-technique and its methodology. *Methodology, 7*(2), 39–55.

Elmer, T., & Stadtfeld, C. (2020). Depressive symptoms are associated with social isolation in face-to-face interaction networks. *Scientific Reports, 10*(1), 1444. https://doi.org/10.1038/s41598-020-58297-9

Finn, J. (2004). A survey of online harassment at a university campus. *Journal of Interpersonal Violence, 19*(4), 468–483. https://doi.org/10.1177/0886260503262083

Goodman, J. K., Cryder, C. E., & Cheema, A. (2013). Data collection in a flat world: The strengths and weaknesses of mechanical turk samples. *Journal of Behavioral Decision Making, 26*(3), 213–224. https://doi.org/10.1002/bdm.1753

Graham, J. W., Olchowski, A. E., & Gilreath, T. D. (2007). How many imputations are really needed? Some practical clarifications of multiple imputation theory. *Prevention Science, 8*, 206–213. https://doi.org/10.1007/s11121-007-0070-9

Hawthorne, G. (2006). Measuring social isolation in older adults: Development and initial validation of the friendship scale. *Social Indicators Research, 77*(3), 521–548. https://doi.org/10.1007/s11205-005-7746-y

Hayes, A. F., & Cai, L. (2007). Using heteroskedasticity-consistent standard error estimators in OLS regression: An introduction and software implementation. *Behavior Research Methods, 39*(4), 709–722. https://doi.org/10.3758/BF03192961

Leisring, P. A., & Giumetti, G. W. (2014). Sticks and stones may break my bones, but abusive text messages also hurt: Development and validation of the cyber psychological abuse scale. *Partner Abuse, 5*(3), 323–341. https://doi.org/10.1891/1946-6560.5.3.323

Lyndon, A., Bonds-Raacke, J., & Cratty, A. D. (2011). College students' facebook stalking of ex-partners. *Cyberpsychology, Behavior, and Social Networking, 14*(12), 711–716. https://doi.org/10.1089/cyber.2010.0588

Maple, C., Short, E., Brown, A., Bryden, C., & Salter, M. (2012). Cyberstalking in the UK: Analysis and recommendations. *International Journal of Distributed Systems and Technologies, 3*(4), 34–51. https://doi.org/10.4018/jdst.2012100104

Marcum, C. D., Higgins, G. E., & Nicholson, J. (2017). I'm watching you: Cyberstalking behaviors of university students in romantic relationships. *American Journal of Criminal Justice, 42*(2), 373–388. https://doi.org/10.1007/s12103-016-9358-2

Mason, W., & Suri, S. (2012). Conducting behavioral research on amazon's mechanical turk. *Behavior Research Methods, 44*(1), 1–23. https://doi.org/10.3758/s13428-011-0124-6

Mechanic, M. B., Uhlmansiek, M. H., Weaver, T. L., & Resick, P. A. (2000). The impact of severe stalking experienced by acutely battered women: An examination of violence, psychological symptoms and strategic responding. *Violence and Victims, 15*(4), 443–458. https://doi.org/10.1891/0886-6708.15.4.443

Melander, L. A. (2010). College students' perceptions of intimate partner cyber harassment. *Cyberpsychology, Behavior, and Social Networking, 13*(3), 263–268. https://doi.org/10.1089/cyber.2009.0221

National Network to End Domestic Violence. (2017). Technology-facilitated stalking: What you need to know. https://nnedv.org/latest_update/technology-facilitated-stalking/

Nguyen, J., Moorhouse, M., Curbow, B., Christie, J., Walsh-Childers, K., & Islam, S. (2016). Construct validity of the eHealth literacy scale (eHEALS) among two adult populations: A rasch analysis. *JMIR Public Health and Surveillance, 2*(1), e24. https://doi.org/10.2196/publichealth.4967

Oppong Asante, K., & Andoh-Arthur, J. (2015). Prevalence and determinants of depressive symptoms among university students in Ghana. *Journal of Affective Disorders, 171*, 161–166. https://doi.org/10.1016/j.jad.2014.09.025

Paolacci, G., Chandler, J., & Ipeirotis, P. G. (2010). Running experiments on amazon mechanical turk. *Judgment and Decision Making, 5*(5), 411–419.

Papp, L. M., Danielewicz, J., & Cayemberg, C. (2012). "Are we Facebook official?" Implications of dating partners' facebook use and profiles for intimate relationship satisfaction. *Cyberpsychology, Behavior and Social Networking, 15*(2), 85–90. https://doi.org/10.1089/cyber.2011.0291

Pew Research Center. (2016). 15% of American adults use online dating sites or mobile apps. https://www.pewresearch.org/internet/2016/02/11/15-percent-of-american-adults-have-used-online-dating-sites-or-mobile-dating-apps/.

Purcell, R., Pathé, M., & Mullen, P. (2004). Editorial: When do repeated intrusions become stalking? *Journal of Forensic Psychiatry & Psychology, 15*(4), 571–583. https://doi.org/10.1080/14789940412331313368

Reyns, B. W., Henson, B., & Fisher, B. S. (2012). Stalking in the twilight zone: Extent of cyberstalking victimization and offending among college students. *Deviant Behavior, 33*(1), 1–25. https://doi.org/10.1080/01639625.2010.538364

Shorey, R. C., Cornelius, T. L., & Strauss, C. (2015). Stalking in college student dating relationships: A descriptive investigation. *Journal of Family Violence, 30*(7), 935–942. https://doi.org/10.1007/s10896-015-9717-7

Smoker, M., & March, E. (2017). Predicting perpetration of intimate partner cyberstalking: Gender and the dark tetrad. *Computers in Human Behavior, 72*, 390–396. https://doi.org/10.1016/j.chb.2017.03.012

Stephenson, W. (1935). Technique of factor analysis. *Nature, 136*, 297. https://doi.org/10.1038/136297b0

Stephenson, W. (1953). *The study of behavior: Q-technique and its methodology*. University of Chicago Press.

The National Center for Victims of Crime. (2011). Stalking resource center. https://victimsofcrime.org/our-programs/past-programs/stalking-resource-center.

United States Department of Justice. (2000). The electronic frontier: The challenge of unlawful conduct involving use of the internet: A report of the president's working group on unlawful conduct on the internet. https://www.hsdl.org/?abstract&did=3029.

Worsley, J. D., Wheatcroft, J. M., Short, E., & Corcoran, R. (2017). Victims' voices: Understanding the emotional impact of cyberstalking and individuals' coping responses. *SAGE Open, 7*(2), 1–13. https://doi.org/10.1177/2158244017710292

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