Digital poly-victimization: The increasing importance of online crime and harassment to the burden of victimization

Article *in* Journal of Trauma & Dissociation · May 2018
DOI: 10.1080/15299732.2018.1441357

CITATION
1

READS
179

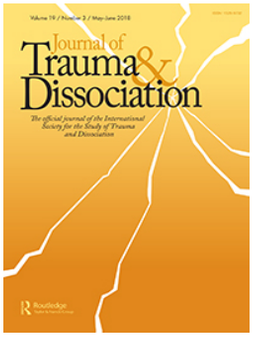
6 authors, including:

Sherry Hamby
University of the South
242 PUBLICATIONS **12,460** CITATIONS
SEE PROFILE

Zach Blount
Davidson College
10 PUBLICATIONS **2** CITATIONS
SEE PROFILE

Alli Smith
University of Kansas
18 PUBLICATIONS **14** CITATIONS
SEE PROFILE

Lisa M Jones
University of New Hampshire
67 PUBLICATIONS **1,884** CITATIONS
SEE PROFILE



Journal of Trauma & Dissociation

ISSN: 1529-9732 (Print) 1529-9740 (Online) Journal homepage: http://www.tandfonline.com/loi/wjtd20

Digital poly-victimization: The increasing importance of online crime and harassment to the burden of victimization

Sherry Hamby, Zach Blount, Alli Smith, Lisa Jones, Kimberly Mitchell & Elizabeth Taylor

To cite this article: Sherry Hamby, Zach Blount, Alli Smith, Lisa Jones, Kimberly Mitchell & Elizabeth Taylor (2018) Digital poly-victimization: The increasing importance of online crime and harassment to the burden of victimization, Journal of Trauma & Dissociation, 19:3, 382-398, DOI: 10.1080/15299732.2018.1441357

To link to this article: https://doi.org/10.1080/15299732.2018.1441357

JOURNAL OF TRAUMA & DISSOCIATION
2018, VOL. 19, NO. 3, 382–398
https://doi.org/10.1080/15299732.2018.1441357

Routledge
Taylor & Francis Group

ARTICLE

Digital poly-victimization: The increasing importance of online crime and harassment to the burden of victimization

Sherry Hamby, PhD[a], Zach Blount, BS[a], Alli Smith, BA[a], Lisa Jones, PhD[b], Kimberly Mitchell, PhD[b], and Elizabeth Taylor, MS[a]

[a]Appalachian Center for Resilience Research & Department of Psychology, University of the South, Monteagle, TN, USA; [b]Crimes Against Children Research Center, West Edge, University of New Hampshire, Durham, NH, USA

ABSTRACT

Many forms of victimization, including bullying and property crime, are increasingly moving online, but most studies of poly-victimization still primarily focus on in-person crime and violence. Few studies have examined the importance of incorporating technology-based victimizations for assessing the true burden of violence. The purpose of this study is to explore whether digital poly-victimization contributes to post-traumatic stress and anxiety/dysphoria symptoms after controlling for in-person poly-victimization. Given that technology use and technology-based victimization are changing rapidly, a mixed methods approach was adopted. In the first two phases, focus groups and cognitive interviews (89 total participants) were used to identify the range of digital victimization and develop the Digital Poly-Victimization Scale. In the third phase, the new measure was included in a community survey (n = 478, 57.5% female; 62.6% earning under $50,000 per year) in a rural Southern region, along with measures of in-person poly-victimization, posttraumatic stress and anxiety/dysphoria symptoms, and other outcomes and personal characteristics. A comprehensive measure of digital poly-victimization indicated that almost 3 in 4 participants (72.3%) had experienced at least one form of digital victimization. The results indicated that digital poly-victimization contributed unique variance to post-traumatic stress and anxiety/dysphoria symptoms ($p < .001$), health-related quality of life ($p < .01$), and subjective and family well-being (both $p < .001$), even after controlling for demographics and in-person poly-victimization. Digital victimization often presents fewer risks to perpetrators and can be expected to represent an increasing share of the societal burden of violence. Future research on poly-victimization should pay more attention to the role of digital victimization.

ARTICLE HISTORY
Received 27 April 2017
Accepted 30 November 2017

KEYWORDS
Poly-victimization; online crime; Internet; trauma symptoms

More and more crime is moving online. This should not be particularly surprising, because, from the perpetrator's point of view, there are many advantages to technology-based, or digital, crime. A victim of in-person mugging or bullying might fight back, potentially injuring the perpetrator. There are fewer inhibitory

CONTACT Sherry Hamby sherry.hamby@sewanee.edu, sherry.hamby@gmail.com Appalachian Center for Resilience Research & University of the South, 1016 West Main St., Suite 3, Monteagle, TN, 37356, USA.

mechanisms in place. Animal aggression, including human aggression, has historically been controlled by a wide range of behavioral cues (Hamby, 2017; Natarajan & Caramaschi, 2010). The digital environment—whether it be cell phones, websites, community gaming sites, or other settings—removes many of the cues that humans, as mammals, have historically also relied on to inhibit aggression. In other words, many people "troll" or "flame" or otherwise say things online or over text that they would not say to a person that is right in front of them (Suler, 2004).

Digital victimization can be defined as victimization (which are intentional, unwanted, nonessential, and harmful experiences, Hamby, 2017) that is perpetrated with the assistance of computerized technology, such as desktops, the Internet, or cell phones. Several new terms for online victimization and related risky behaviors have been coined to capture these emerging phenomena, including "cyberbullying," "sexting," and "phishing" (Jagatic, Johnson, Jakobsson, & Menczer, 2007; Mitchell, Finkelhor, Jones, & Wolak, 2012; Mitchell & Jones, 2015). Based on the most recently available data at the time of writing, 88% of U.S. adults use the Internet, and 77% use a smart phone (Pew Research Center, 2017), which means that vulnerability to digital or "cyber" victimization is nearly as universal as vulnerability to in-person victimization.

The high rates of digital victimization are well known (Anderson, 2006; Internet Crime Complaint, 2014; Reyns, 2013; C. Smith & Agarwal, 2010). The best estimates indicate that approximately 2 out of 5 people in the United States have been affected by cyberbullying and online harassment, which does not even include identity thefts, scams, hacking of accounts, and other financially motivated victimizations (Duggan, 2017). The adverse impact of cyberbullying and online harassment is also well established (e.g., Kowalski & Limber, 2013). The data are especially clear that cyberbullying is associated with trauma symptoms and other adverse outcomes (Hinduja & Patchin, 2010; Staude-Müller, Hansen, & Voss, 2012).

Less is known about financially motivated cyber-victimizations, but existing data suggest that these victimizations are associated with higher levels of psychological distress and other adverse impacts, with some victims falling within the clinical range of depression and anxiety. Although a few items on financial loss have been embedded in longer surveys on online victimization (González & Orgaz, 2014; Mitchell, Sabina, Finkelhor, & Wells, 2009), they have often been combined with safety practices, general use patterns, and other elements that are not related to victimization. A comprehensive assessment of the full range of different types of digital victimization has been lacking.

Another key limitation of existing knowledge is that digital victimization research has been relatively siloed. For example, research on cyberbullying is often conducted independently of other research on in-person bullying (e.g., P. K. Smith et al., 2008). This is true even though studies have indicated it is often

the same children involved in-person and online bullying (Mitchell & Jones, 2015; Mitchell, Jones, Turner, Shattuck, & Wolak, 2016).

Poly-victimization and digital crime

Even more significantly, digital victimization has only been partly integrated into the poly-victimization model. Poly-victimization refers to the cumulative burden of the number of different types of victimization experiences. Poly-victimization research has shown that it is the cumulative dose of victimization, more than any one type, that is chiefly responsible for trauma symptoms and other adverse impacts (Ford, Elhai, Connor, & Frueh, 2010; Ford, Grasso, Hawke, & Chapman, 2013; Hamby & Grych, 2013). This research is also consistent with other work on cumulative trauma, such as work on adverse childhood experiences (Felitti et al., 1998).

However, digital victimization has not been well captured in previous work on poly-victimization and cumulative trauma, potentially missing many common victimization experiences in the estimates of total burden. Many commonly used trauma measures do not include digital victimization at all, such as the adverse childhood experiences scale and the Childhood Trauma Questionnaire (Bernstein, Ahluvalia, Pogge, & Handelsman, 1997; Felitti et al., 1998). The National Survey of Children's Exposure to Violence only included two types of digital victimization, general and sexual harassment from online messages, leaving out identity theft and many other types of victimization (Finkelhor, Turner, Ormrod, Hamby, & Kracke, 2009). The item on unwanted sexual messages, while important, is also relatively rare and thus does not well capture the full burden of online victimization. Although the limitations of these measures are due in part to the era when they were created, their unmodified use in the digital age makes their coverage increasingly limited.

Even today, most research on digital victimization, and indeed on crime more generally, pays insufficient attention to digital property crime, including identity theft and financially motivated fraud (Tcherni, Davies, Lopes, & Lizotte, 2016). Property crime is distressing (Plass, 2014). Prior work on poly-victimization shows that conventional theft and vandalism add to the total burden of victimization (Finkelhor, Ormrod, Turner, & Hamby, 2005). Unlike many forms of in-person property crime, which often do not involve a direct confrontation with the victim (Hamby, 2017), many digital forms of property crime involve cons that involve deceiving the victim, sometimes even over long periods of time, such as the "catfishing" con that involves tricking someone into thinking the perpetrator has a sincere romantic interest. Stealing elements of people's identities may also be a particularly upsetting form of property crime, versus stealing cash or electronics or other less personal or sentimental items. The financial costs of online property crime can outstrip in-person thefts (Tcherni et al.,

2016). However, as far as we are aware, no prior studies have examined these sorts of crime in a poly-victimization framework.

The current study

One challenge of research on digital victimization is the rapidly changing technology environment. Some measures refer to America Online, chat rooms, instant messaging, or other already-dated references (Hinduja & Patchin, 2010; P. K. Smith et al., 2008). Even references to "computers" can sound dated as people increasingly rely on cellphones and tablets for all of their computing needs. Thus, this study adopted a mixed-methods approach to capture current experiences, utilizing two phases of qualitative investigation into current digital use and victimization experiences, followed by a large community survey using items developed from the qualitative work. One major goal of the study was also to move beyond cyberbullying and incorporate digital property victimization and "imposter scams" (Federal Trade Commission, 2017) into a comprehensive assessment of adverse digital experiences. Another goal of the study was to examine multiple outcome variables, including post-traumatic stress and anxiety/dysphoria symptoms and other indicators of health, to explore the full impact of victimization. Consistent with the poly-victimization framework (Hamby & Grych, 2013), we anticipate that in-person and digital victimization will be linked. We also hypothesized that digital poly-victimization would explain unique variance in post-traumatic stress and anxiety/dysphoria symptoms and other outcomes, after controlling for in-person poly-victimization.

Method

Participants

The qualitative phases of measurement development of digital victimization consisted of 9 focus groups (4 teen groups and 4 adult groups with 65 total participants; 58% female; 92% White/European American, 3% Latino, 3% multiracial, and 2% African-American) and 24 in-depth individual interviews (25% aged 12–17, 54.2% aged 18–59, 20.8% age 60 or over; 62.5% female; 87.5% White/European American, 8.3% Latino, 4.2% African American). All participants were from the rural southeastern United States, in counties designated as Appalachian by the Appalachian Regional Commission.

The survey included 478 participants from the rural southeastern United States aged 12 to 75 years (M = 36.44, SD = 17.61) who completed a broader survey on digital online privacy and security and character development. The sample was 57.5% female and 42.5% male; most (84.9%) of the sample identified as White/European American (non-Latino), 5.7% as African American/Black (non-Latino), 4.0% as more than one race, 3.6% as Latino/Latina (any race), .8% as Asian (non-

Latino), and .8% American Indian/Alaska Native (non-Latino). Almost a third of survey participants (29.3%) reported an annual income under $20,000 per year, 33.3% reported earning $20,000 to $50,000, and 37.4% reported earning $50,000 or more. Most of the sample (54.6%) lived in rural areas with populations of less than 2,500 people, 32.7% reported living in small towns with a population of 2,500 to 20,000 people, and others (12.7%) lived in more populous areas.

Procedure

Participants were recruited through a range of advertising techniques. For the qualitative phases, participants were recruited through local organizations and word-of-mouth. In the semi-structured focus groups, participants answered questions regarding technology use, problems faced when using technology (scams), and safety practices that protect their privacy. Each focus group participant received a $20 gift card for participation. The procedures for in-depth individual interviews were similar, with the exception that participants were shown a list of items on different types of digital privacy victimization and other issues that were developed from the focus groups by the research team and previously reviewed by 6 external researchers. Interviewees received a $50 gift card for participation. Focus groups and interviews were audiotaped and transcribed. All procedures received IRB approval from the University of the South.

The majority of survey participants (65.7%) were recruited through word-of-mouth. Recruitment at local community events, such as festivals and county fairs, was the second most productive strategy, accounting for 21.3% of participants. The remaining 13% were recruited through various other strategies, such as website advertisement and through local community organizations. This range of recruitment strategies, which resulted in 96% of the sample being recruited through in-person techniques, allowed us to reach segments of the population who are rarely included in psychological research, including those with limited Internet experience. Technical problems and time limitations at events kept some individuals from completing the survey. The overall completion rate was 94%. The survey was administered as a computer-assisted self-interview, using the Snap11 software platform on computer tablets. On average, the survey took 31 minutes to complete, and each participant received a $20 Walmart gift card and was provided with information on local community resources. Informed consent, including parental consent for minors, was obtained for all participants. All procedures were IRB approved.

Measures

Digital Victimization Scale

The Digital Victimization Scale (Hamby, Smith, & Taylor, 2017) consists of 11 items on a range of online or cellphone-based adverse experiences, including

cyberbullying and cyber-theft of information or money. The items were developed through a three-stage mixed methods process, with the most common and salient experiences first identified in focus groups, then vetted in the individual in-depth interviews, and then revised and incorporated into the survey. The qualitative phase of measurement development yielded a wide range of adverse experiences, including hacking ("[My husband] got hacked three times in a period of six weeks all the way from Florida to Canada."), scams ("I had a friend of mine that got caught in a scam and it was because they thought their friend was in trouble."), using log-ins without permission ("[Son's name] will catch me when I step away from the computer… and he put something [obscene] on … Facebook"), and posting unwanted material ("Someone in my class posted a photo of a teacher, like a weird caption and it was offensive … they got suspended"). We used these to develop a range of items that addressed cyberbullying and related interpersonal harassment as well as financially motivated victimizations.

Dichotomous items ("yes" or "no") were summed to create a digital poly-victimization score. The internal consistency (Cronbach's Alpha) is .70 (inspection of items indicated removing no item would improve the alpha), and in this sample, convergent validity was supported with the bivariate correlation with post-traumatic stress and anxiety/dysphoria, which was symptoms was .31. See Appendix 1 for complete wording.

In-person poly-victimization was assessed with the *Juvenile Victimization Questionnaire—Key Domains Form*, which includes 13 items assessing lifetime history of a range of different types of interpersonal victimization, focusing on childhood victimization experiences such as bullying, child abuse, and exposure to domestic violence (validated in Banyard, Hamby, & Grych, 2017) and adapted from Hamby, Finkelhor, Ormrod, & Turner, 2004. A sample item is "During your childhood, did one of your parents get hit or pushed by another parent?" Dichotomous items ("yes" or "no") were summed to create an in-person poly-victimization score. Cronbach's Alpha was .84, and in this sample convergent validity was supported with bivariate correlations with digital poly-victimization (.37; $p < .001$) and post-traumatic stress and anxiety/dysphoria symptoms (.34; $p < .001$).

Post-traumatic stress and anxiety/dysphoria symptoms

Eight psychological symptoms associated with post-traumatic stress disorder and other anxiety and mood disorders (adapted from Briere, 1996; Finkelhor et al., 2011 based on the best-performing items in those scales, with simplified language for our sample) were assessed on a 4-point scale from "never" to "almost all the time." A sample item is "Feeling lonely in the last month." Higher scores indicate more post-traumatic stress and anxiety/dysphoria symptoms. Internal consistency (Cronbach's Alpha) was .89, and in this sample, convergent validity was supported with a bivariate correlation of -.29 ($p < .001$)

with Health-Related Quality of Life. Also see Hamby, Grych, & Banyard, 2017 for additional evidence of convergent validity. See Appendix 2 for complete wording.

Health-related quality of life

Five items assessing physical health and well-being were adapted from the "Healthy Days Measure" used by the U.S. Centers for Disease Control and Prevention (CDC, 2000). Items use a 5-point scale measuring frequency in the past 30 days, ranging from "0 days" to "Every day or almost every day." Another item assessed self-reported general health on a 5-point scale, ranging from "poor" to "excellent," with higher scores indicated higher health-related quality of life. A sample item is, "During the past 30 days, how many days was your physical health, which includes physical illness and injury, not good?" Internal consistency (Cronbach's Alpha) was .79, and in this sample, convergent validity was supported with bivariate correlations with Subjective Well-Being (.34; $p < .001$) and Family Well-Being (.28; $p < .001$) (also see Hamby et al., 2017).

Subjective well-being (Hamby, Banyard, Grych, Smith, & Taylor, 2017)

Four items assessing one's satisfaction with the quality of life were developed using focus group and interview input as well as a review of other measures (Battista & Almond, 1973; Diener, Emmons, Larsen, & Griffin, 1985; Pavot & Diener, 1993; Pearlin & Schooler, 1978; Rosenberg, 1965; Turner et al., 2012). A sample item is "I am happy with myself." Cronbach's Alpha was .87, and in this sample, the bivariate correlation with post-traumatic growth was .52 ($p < .001$) and a -.43 ($p < .001$) correlation with trauma symptoms (for additional validity evidence, see Hamby, Banyard, Grych, Smith, & Taylor, 2017).

Family well-being

Four items assessing the positivity, happiness, and well-being within the family were adapted and modified from the subjective well-being measure (Hamby et al., 2017). Items were scored on a 4-point scale ranging from "not true about my family" to "mostly true about my family," with higher scores indicating higher family well-being. A sample item is, "My family has a lot to be proud of." Cronbach's Alpha was .85, and evidence of convergent validity is the bivariate correlation with Subjective Well-Being was .51 ($p < .001$) (also see Hamby, Blount, Taylor, & Smith, 2017).

Data analysis

As noted in the measures section, the first two qualitative phases were used to develop the Digital Victimization Scale, using content analysis and grounded

theory analysis of focus groups and interviews. Descriptive statistics characterized rates of victimization and described the sample. Missing data were very low (0% to 2.3%), except for household income, which was 7.5%, well under the levels recommended by Bennett (2001). Non-demographic data were imputed. Odds ratios were calculated to test whether the experiences of in-person and of digital poly-victimization were related. Hierarchical regression was used to explore the contribution digital poly-victimization experiences to a range of outcomes. In each regression, we first entered age, gender, and household income, and then in the second block, we added poly-victimization. Finally, in the third block, digital poly-victimization was added to see if it made a contribution to psychological or health status after controlling for in-person poly-victimization and demographic variables. We conducted this regression for five different outcome variables: post-traumatic stress and anxiety/dysphoria symptoms, health-related quality of life, subjective well-being, and spiritual well-being.

Results

Rates of in-person and digital poly-victimization

Most of our participants (84%) reported at least one form of in-person victimization during the course of their lifetime, with a mean of 4.03 lifetime victimization types per person (SD = 3.38). Digital victimization was somewhat less common in this sample, but still prevalent. Almost 3 in 4 participants (72.3%) reported at least one digital victimization, with a mean of 1.86 different types of victimization per person (SD = 1.92). Consistent with the poly-victimization framework, participants reporting any in-person victimization were more as likely to also report at least one type of digital victimization, odds ratio = 2.17 (95% confidence interval 1.30–3.60), $p < .01$. Approximately 3 in 4 (74.9%) of in-person victims reported digital victimization, compared to 57.9% of those who had not experienced in-person victimization.

Post-traumatic stress and anxiety/dysphoria symptoms and victimization

In the first block of the hierarchical regression for post-traumatic stress and anxiety/dysphoria symptoms, age and income were both significantly related to symptoms, in the inverse direction (see Table 1). Older participants and those with higher incomes reported fewer symptoms than others. Poly-victimization added significantly more variance, with a change (Δ) in R^2 of 11.1%. As predicted, a higher burden of in-person victimization was associated with higher post-traumatic stress and anxiety/dysphoria symptoms in the past month. Digital poly-victimization, in the third block, added significant additional variance to the equation, although less variance than explained by in-person victimization (change in R^2 of 3% vs 11.1%). Income was no longer significant

Table 1. Hierarchical multiple regression analyses predicting post-traumatic stress and anxiety/dysphoria symptoms.

	Outcome: Symptoms					
Predictor	Total R^2	ΔR^2	B	β	CI for B (95%)	
Step 1 ***	.047	.047				
Age			−.058	−.170***	−.091;	−.026
Gender			−.051	−.004	−1.194;	1.092
Household Income			−.985	−.135**	−1.674;	−.297
Step 2 ***	.158	.111				
Age			−.069	−.202***	−.100;	−.039
Gender			.212	.018	−.866;	1.290
Household Income			−.664	−.091*	−1.318;	−.011
Poly-victimization			.593	.337***	.437;	.749
Step 3 ***	.188	.030				
Age			−.068	−.198***	−.098;	−.038
Gender			.313	.026	−.748;	1.374
Household Income			−.590	−.081	−1.233;	.054
Poly-victimization			.474	.269***	.310;	.638
Digital Poly-victimization			.601	.188***	.304;	.897
Total R^2 for full model	.188					

***$p < .001$, **$p < .01$, *$p < .05$. ΔR^2 = change in percent of variance explained at each step.

after controlling for digital poly-victimization. The total R^2 for the full model including all variables was 18.8%.

Health-related quality of life and victimization

In Block 1 of this hierarchical regression, age was inversely associated with health-related quality of life, while household income was positively associated with this outcome variable. Younger participants and those with higher household incomes reported higher health-related quality of life. Poly-victimization was also inversely associated with health-related quality of life in the second block, adding significantly more variance to the equation ($\Delta R^2 = 4.8\%$). In the third block, digital poly-victimization also added significantly more variance ($\Delta R^2 = 2.1\%$), with participants experiencing more digital victimization also reporting lower levels of health quality. In the third block, age, household income, and poly-victimization all remained significant. The full equation accounted for 20.1% of the variance in health-related quality of life. See Table 2 for regression results.

Subjective well-being and victimization

For subjective well-being, household income was positively associated with subjective well-being in the first block, but age and gender were not significant. In the second block, poly-victimization added significant additional variance to the equation ($\Delta R^2 = 3.7\%$) and was inversely associated with subjective well-being. Digital poly-victimization added significant variance in the third block

Table 2. Hierarchical multiple regression analyses predicting health-related quality of life.

	Outcome: Health-Related Quality of Life					
Predictor	Total R^2	ΔR^2	B	β	CI for B (95%)	
Step 1 ***	.132	.132				
Age			−.047	−.191***	−.070;	−.025
Gender			−.028	−.003	−.814;	.758
Household Income			1.614	.306***	1.140;	2.088
Step 2 ***	.180	.048				
Age			−.042	−.170***	−.064;	−.020
Gender			−.156	−.018	−.922;	.611
Household Income			1.462	.278***	−.997;	1.927
Poly-victimization			−.282	−.222***	−.393;	−.171
Step 3 **	.201	.021				
Age			−.043	−.174***	−.065;	−.021
Gender			−.217	−.025	−.976;	.542
Household Income			1.417	.269***	.957;	1.878
Poly-victimization			−.211	−.166***	−.328;	−.093
Digital Poly-victimization			−.358	−.155**	−.570;	−.146
Total R^2 for full model	.201					

***$p < .001$, **$p < .01$, *$p < .05$. ΔR^2 = change in percent of variance explained at each step.

Table 3. Hierarchical multiple regression analyses predicting subjective well-being.

	Outcome: Subjective Well-Being					
Predictor	Total R^2	ΔR^2	B	β	CI for B (95%)	
Step 1 **	.031	.031				
Age			.008	.056	−.006;	.023
Gender			.307	.059	−.194;	.809
Household Income			.518	.163**	.215;	.820
Step 2 ***	.068	.037				
Age			.011	.074	−.003;	.025
Gender			.238	.046	−.255;	.732
Household Income			.440	.138**	.140;	.739
Poly-victimization			−.148	−.194***	−.220;	−.077
Step 3 ***	.107	.039				
Age			.010	.069	−.003;	.024
Gender			.189	.036	−.296;	.673
Household Income			.401	.126**	.107;	.694
Poly-victimization			−.089	−.117*	−.164;	−.015
Digital Poly-victimization			−.298	−.214***	−.434;	−.163
Total R^2 for full model	.107					

***$p < .001$, **$p < .01$, *$p < .05$. ΔR^2 = change in percent of variance explained at each step.

($\Delta R^2 = 3.9\%$; total $R^2 = 10.7\%$), with more digital poly-victimization associated with lower subjective well-being. Household income and poly-victimization remained positively and negatively associated with subjective well-being, respectively. See Table 3 for regression results.

Family well-being and victimization

For family well-being, household income was positively related to family well-being in the first block, but age and gender were not significant. Poly-victimization added significantly more variance ($\Delta R^2 = 7.8\%$), and as

Table 4. Hierarchical multiple regression analyses predicting family well-being.

	Outcome: Family Well-Being					
Predictor	Total R^2	ΔR^2	B	β	CI for B (95%)	
Step 1 **	.038	.038				
Age			−.005	−.034	−.018;	.009
Gender			.167	.034	−.301;	.634
Household Income			.584	.197***	.302;	.866
Step 2 ***	.116	.078				
Age			−.001	−.007	−.014;	.012
Gender			.073	.015	−.377;	.523
Household Income			.479	.161**	.207;	.752
Poly-victimization			−.202	−.282***	−.267;	−.137
Step 3 ***	.151	.035				
Age			−.002	−.011	−.014;	.011
Gender			.027	.006	−.415;	.469
Household Income			.447	.151**	.179;	.715
Poly-victimization			−.150	−.210***	−.219;	−.082
Digital Poly-victimization			−.262	−.201***	−.385;	−.138
Total R^2 for full model	.151					

***$p < .001$, **$p < .01$, *$p < .05$. ΔR^2 = change in percent of variance explained at each step.

predicted, poly-victimization was associated with lower family well-being. In the third block, digital poly-victimization also added significant variance ($\Delta R^2 = 3.5\%$) and was inversely associated with family well-being, resulting in a total R^2 of 15.1%. Household income remained positively associated, and poly-victimization remained inversely associated with family well-being in the third block. See Table 4 for regression results.

Discussion

In this community sample, digital poly-victimization is a significant component of the true burden of victimization. Analyses indicated that digital poly-victimization contributed unique variance to post-traumatic stress and anxiety/dysphoria symptoms and three other outcome variables, even after controlling for in-person poly-victimization and demographic characteristics. This was largely consistent with predictions. Digital victimization (mono- or poly-victimization) was also a prevalent experience, with almost 3 in 4 respondents reporting at least one type of digital victimization experience. Qualitative data also supported the premise that there are a wide range of types of digital victimization that people experience. Also consistent with predictions, those with an in-person victimization history were more likely to experience at least one digital victimization than those who reported no in-person victimizations (74.9% versus 57.9%). As more crime moves online, it will become increasingly important to recognize the impact of digital poly-victimization, including not only cyberbullying but other widespread forms of digital victimization, such as online fraud and identity theft (Tcherni et al., 2016). A comparison of the bivariate and multivariate analyses suggests that some of the

variance in post-traumatic stress and anxiety/dysphoria symptoms is similar for in-person and digital victimization. The bivariate correlations with post-traumatic stress and anxiety/dysphoria symptoms were similar for both scales (.31 and .34). However, the multivariate results indicate that digital victimization has a unique impact beyond the more typically measured in-person victimization. This is consistent with current thinking on poly-victimization, which suggests that the number of distinct violations—especially different settings and different perpetrators— has the largest impact on post-traumatic stress and anxiety/dysphoria symptoms. As more of our interactions move online, it is important that research captures this domain where vulnerability is high. As far as we are aware, this is the first study to show that digital poly-victimization is uniquely associated with post-traumatic stress and anxiety/dysphoria symptoms and other outcomes.

The finding that digital poly-victimization is adding significantly to individuals' victimization burdens is largely consistent with more siloed research on the burden of online crime (Jones, Mitchell, & Finkelhor, 2012; Kowalski & Limber, 2013). Some have even suggested that the much-vaunted reduction in crime could be eliminated if a full reckoning of digital victimization was included in crime rates (Tcherni et al., 2016). The high rates of reporting both in-person and online victimization are also consistent with research indicating that, like other research into the web of violence (Hamby & Grych, 2013), many people are being victimized via both modalities (Mitchell & Jones, 2015).

This study also adds to the limited evidence base of the digital victimization experiences of rural, low-income residents. Although some people with lower incomes have less technology experience (A. Smith, 2013), it is a misconception that people living in a rural area would not be apt to experience any digital victimization. Our study demonstrates that people in rural residences experience digital poly-victimization at high rates and that it contributes to their overall burden of victimization. Rural and low-income populations should not be excluded from studies involving digital poly-victimization; it is our hope that future studies will work to develop prevention efforts to combat digital poly-victimization in all populations.

Strengths and limitations

The results of this study should be considered in light of the strengths and limitations of the project. To our knowledge, this is the first study to examine the unique contribution of digital poly-victimization, beyond in-person poly-victimization, on post-traumatic stress and anxiety/dysphoria symptoms and a variety of other outcome measures. It is also one of the few to study online victimization in residents of rural Appalachia. Appalachia, one of the largest low-income regions of the United States, is an under-studied region that can be

hard to access for outsiders (Woodard, 2011), and our large community sample from this area is a strength. However, at the same time, the region has unique demographic characteristics, such as below average income relative to the rest of the United States and less racial and ethnic diversity than many regions of the country. Although we believe our sampling strategy effectively recruited many people who seldom participate in survey research, the non-random sample may have unknown biases. This was a cross-sectional study, which is an appropriate and cost-effective means of exploring new ideas, but would benefit from replication in a longitudinal study. It included a broad range of ages, from adolescence through adulthood. The creation and adaptation of numerous strengths measures in the context of digital-poly-victimization for a low-income community sample involving youth as young as age 12 also is a strength. Though not included in our version of digital victimization, malicious sexting should also be addressed by future research. Prior work has found that sexting is considered a risky behavior, and when sexting coercion is involved, it has been found to have a negative impact on mental health (Mitchell et al., 2012; Ross, Drouin, & Coupe, 2016). It would be worthwhile for future research to investigate the recency and severity of digital victimization as possible factors affecting the impact. Further research is needed to determine whether specific types of digital victimization are responsible for its association with distress (as opposed to the cumulative score used in these analyses).

Research and clinical implications

As patterns of crime change due to the growing prevalence of Internet and online activities, researchers and clinicians should enhance their assessment tools in order to provide coverage of issues regarding digital poly-victimization. Most immediately, we encourage professionals to add questions on digital experiences to any assessment of victimization, and to further explore the links between in-person and digital poly-victimization. Clinicians should be aware that digital victimization is a common experience that has probably affected many of their clients, at least as mono-victims and in many cases as poly-victims too. Any assessment should include the full range of types of digital victimization, including financially motivated victimizations as well as interpersonal offenses, in order to adequately capture the true burden of victimization. Measures that are limited to cyberbullying are not sufficiently capturing digital poly-victimization. Our estimates of digital poly-victimization are almost twice as high as recent estimates based primarily on cyberbullying and harassment (Duggan, 2017)

Regarding prevention and intervention, there are many efforts to teach "media" skills regarding fake news and other challenges. We should be teaching youth and other less experienced computer users basic skills in recognizing cons and frauds. Although we did not directly assess fraud

attempts that did not lead to victimization, based on our own experiences, we assume that this is a regular experience for most individuals. Skills in navigating fraudulent offers is a new basic skill that should be required content in schools and in violence prevention programming. As more and more of our daily interactions migrate to online and other digital modalities, it is essential that violence research, prevention, and intervention keep pace with these social changes.

Funding

This research was supported by the Digital Trust Foundation. The opinions in this paper do not necessarily represent the opinions of the Digital Trust Foundation.We thank the participants of our study for helping us to understand digital victimization.

References

Anderson, K. (2006). Who are the victims of identity theft? The effect of demographics. *Journal of Public Policy & Marketing*, *25*(2), 160–171.

Banyard, V., Hamby, S., & Grych, J. (2017). Health effects of adverse childhood events: Identifying promising protective factors at the intersection of mental and physical well-being. *Child Abuse & Neglect*, *65*, 88–98.

Battista, J., & Almond, R. (1973). The development of meaning in life. *Psychiatry*, *36*(4), 409–427.

Bennett, D. A. (2001). How can I deal with missing data in my study? *Australian and New Zealand Journal of Public Health*, *25*(5), 464–469.

Bernstein, D. P., Ahluvalia, T., Pogge, D., & Handelsman, L. (1997). Validity of the childhood trauma questionnaire in an adolescent psychiatric population. *Journal of the American Academy of Child & Adolescent Psychiatry*, *36*(3), 340–348.

Briere, J. (1996). *Trauma Symptoms Checklist for Children (TSCC): Professional manual*. Odessa, FL: Psychological Assessent Resources.

CDC, C. F. D. C. A. P. (2000). *Measuring healthy days: Population assessment of health-related quality of life*. Retrieved from: http://www.cdc.gov/hrqol/pdfs/mhd.pdf

Diener, E., Emmons, R., Larsen, R., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, *49*(1), 71–75.

Duggan, M. (2017). *Online harassment*. Washington, DC: Pew Research Center. Retrieved from http://assets.pewresearch.org/wp-content/uploads/sites/14/2017/07/10151519/PI_2017.07.11_Online-Harassment_FINAL.pdf

Federal Trade Commission. (2017). *Consumer sentinel network data book for January - December 2016*. Retrieved from https://www.ftc.gov/system/files/documents/reports/consumer-sentinel-network-data-book-january-december-2016/csn_cy-2016_data_book.pdf

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., … Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The adverse childhood experiences (ACE) study. *American Journal of Preventative Medicine*, *14*(4), 245–258.

Finkelhor, D., Ormrod, R. K., Turner, H. A., & Hamby, S. L. (2005). Measuring poly-victimization using the juvenile victimization questionnaire. *Child Abuse & Neglect*, *29*(11), 1297–1312.

Finkelhor, D., Turner, H., Hamby, S.L., & Ormrod, R. (2011). *Polyvictimization: Children's exposure to multiple types of violence, crime, and abuse*. Washington, DC: Office of Juvenile Justice and Delinquency Prevention, U.S. Department of Justice.

Finkelhor, D., Turner, H., Ormrod, R., Hamby, S., & Kracke, K. (2009). *Children's exposure to violence: A comprehensive national survey*.Bulletin. Washington, DC: U.S. Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention.

Ford, J. D., Elhai, J. D., Connor, D. F., & Frueh, C. (2010). Poly-victimization and risk of posttraumatic, depressive, and substance use disorders and involvement in delinquency in a national sample of adolescents. *Journal of Adolescent Health*, *46*, 545–552. doi:10.1016/j.jadohealth.2009.11.212

Ford, J. D., Grasso, D. J., Hawke, J., & Chapman, J. F. (2013). Poly-victimization among juvenile justice-involved youths. *Child Abuse & Neglect*, *37*(10), 788–800.

González, E., & Orgaz, B. (2014). Problematic online experiences among Spanish college students: Associations with internet use characteristics and clinical symptoms. *Computers in Human Behavior*, *31*, 151–158. doi:10.1016/j.chb.2013.10.038

Hamby, S. (2017). On defining violence, and why it matters. *Psychology of Violence*, *7*(2), 167–180.

Hamby, S., Banyard, V., Grych, J., Smith, A., & Taylor, E. (2017). *Subjective well-being scale*. Monteagle, TN: Life Paths Appalachian Research Center.

Hamby, S., Blount, Z., Taylor, E., & Smith, A. (2017). *Family well-being scale*. Monteagle, TN: Life Paths Appalachian Research Center.

Hamby, S., Finkelhor, D., Ormrod, R. K., & Turner, H. A. (2004). *The juvenile victimization questionnaire (JVQ): Administration and scoring manual*. Durham, NH: Crimes Against Children Research Center.

Hamby, S., & Grych, J. (2013). *The web of violence: Exploring connections among forms of interpersonal violence and abuse*. New York, NY: Springer.

Hamby, S., Grych, J., & Banyard, V. (2017). Resilience portfolios and poly-strengths: Identifying protective factors associated with thriving after adversity. *Psychology of Violence*. Advanced online publication.

Hamby, S., Smith, A., & Taylor, E. (2017). *Digital poly-victimization scale*. Monteagle, TN: Life Paths Appalachian Research Center.

Hinduja, S., & Patchin, J. W. (2010). Bullying, cyberbullying, and suicide. *Archives of Suicide Research*, *14*(3), 206–221. doi:10.1080/13811118.2010.494133

Internet Crime Complaint Center. (2014). *2014 Internet crime report*. Retrieved from https://www.fbi.gov/news/news_blog/2014-ic3-annual-report

Jagatic, T. N., Johnson, N. A., Jakobsson, M., & Menczer, F. (2007). Social phishing. *Communications of the ACM*, *50*(10), 94–100.

Jones, L., Mitchell, K., & Finkelhor, D. (2012). Trends in youth internet victimization: Findings from three youth internet safety surveys 2000-2010. *Journal of Adolescent Health*, *50*(2), 179–186.

Kowalski, R. M., & Limber, S. P. (2013). Psychological, physical, and academic correlates of cyberbullying and traditional bullying. *Journal of Adolescent Health*, *53*, S13–S20. doi:10.1016/j.jadohealth.2012.09.018

Mitchell, K., Finkelhor, D., Jones, L., & Wolak, J. (2012). Prevalence and characteristics of youth sexting: A national study. *Pediatrics*, *129*(1), 13–20.

Mitchell, K., Jones, L., Turner, H., Shattuck, A., & Wolak, J. (2016). The role of technology in peer harassment: does it amplify harm for youth? *Psychology of Violence*, *6*(2), 193–204. doi:10.1037/a0039317

Mitchell, K., & Jones, L. M. (2015). Cyberbullying and bullying must be studied within a broader peer victimization framework. *Journal of Adolescent Health*, *56*, 473–474. doi:10.1016/j.jadohealth.2015.02.005

Mitchell, K., Sabina, C., Finkelhor, D., & Wells, M. (2009). Index of problematic online experiences: Item characteristics and correlation with negative symptomatology. *Cyberpsychology & Behavior*, *12*(6), 707–711.

Natarajan, D., & Caramaschi, D. (2010). Animal violence demystified. *Frontiers in Behavioral Neuroscience*, *4*(9), 1–16.

Pavot, W., & Diener, E. (1993). Review of the satisfaction with life scale. *Psychological Assessment*, *5*(2), 164–172.

Pearlin, L., & Schooler, C. (1978). The structure of coping. *Journal of Health & Social Behavior*, *19*, 2–21.

Pew Research Center. (2017). Internet/Broadband fact sheet. Retrieved from http://www.pewinternet.org/fact-sheet/internet-broadband/

Plass, P. S. (2014). Property crime victimizations in childhood: A retrospective study. *Journal of Human Behavior in the Social Environment*, *24*(4), 448–461.

Reyns, B. (2013). Online routine and identity theft victimization: Further expanding routine activity theory beyond direct-contact offenses. *Journal of Research in Crime & Deliquency*, *50*(2), 216–238.

Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.

Ross, J. M., Drouin, M., & Coupe, A. (2016). Sexting coercion as a component of intimate partner polyvictimization. *Journal of Interpersonal Violence*. doi:10.1177/0886260516660300

Smith, A. (2013). *Technology adoption by lower income populations*. Retrieved from http://www.pewinternet.org/files/old-media/Files/Presentations/2013/APHSA%20Aaron%20Smith%20Presentation_PDF.pdf

Smith, C., & Agarwal, R. (2010). Practicing safe computing: A multimedia empirical examination of home computer user security behavioral patterns. *MIS Quarterly*, *34*(3), 613–643.

Smith, P. K., Mahdavi, J., Carvalho, M., Fisher, S., Russell, S., & Tippett, N. (2008). Cyberbullying: Its nature and impact in secondary school pupils. *The Journal of Child Psychology and Psychiatry*, *49*(4), 376–385. doi:10.1111/j.1469-7610.2007.01846.x

Staude-Müller, F., Hansen, B., & Voss, M. (2012). How stressful is online victimization? Effects of victim's personality and properties of the incident. *European Journal of Developmental Psychology*, *9*(2), 260–274.

Suler, J. (2004). The online disinhibition effect. *Cyberpsychology & Behavior*, *7*(3), 321–326.

Tcherni, M., Davies, A., Lopes, G., & Lizotte, A. (2016). The dark figure of online property crime: Is cyberspace hiding a crime wave? *Justice Quarterly*, *33*(5), 890–911.

Turner, H., Finkelhor, D., Ormrod, R. K., Hamby, S., Leeb, R., Mercy, J., & Holt, M. (2012). Family context, victimization, and child trauma symptoms: Variations in safe, stable, and nurturing relationships during early and middle childhood. *American Journal of Orthopsychiatry*, *82*(2), 209–219.

Woodard, C. (2011). *American nations: A history of the eleven rival regional cultures of North America*. New York, NY: Penguin.

Appendix 1

Digital Victimization Scale

The next questions ask about people who have contacted you online or on your phone. We mean anyone who contacted you over a phone, email, app, computer, or other device.

1. Someone tricked me into giving personal information over my phone, tablet, or computer.
2. Someone stole information or money from me by "hacking" or breaking into an online account.
3. I have been upset by ads or offers that seem to have personal information about me.
4. I have been upset by the amount of information that I have to share to get apps or programs I need.
5. Someone caused problems for me when they pretended to be me online.
6. Someone caused problems for me when they used my log-in without permission.
7. Someone caused problems for me when they said mean things about me online.
8. Someone caused problems for me when they forwarded embarrassing text messages or pictures.
9. Someone caused problems for me when they tracked my location online.
10. Someone caused problems for me when they told lies or spread rumors about me online.
11. Someone caused problems for me when they kept me out of online groups or group messages.

Note: All items were scored on a two-point scale as either "yes" or "no." Copyright 2017 Sherry Hamby, Elizabeth Taylor, Alli Smith, Zach Blount, Lisa Jones, and Kimberly Mitchell. Reprinted by permission.

Appendix 2

Post-traumatic Stress and Anxiety/Dysphoria Symptoms Scale

These statements describe things that people sometimes think, feel, or do. Please say how true each sentence has been for you in the last month.

1. Feeling lonely in the last month.
2. Feeling sad in the last month.
3. Feeling like shouting at people in the last month.
4. Feeling stupid or like a bad person in the last month.
5. Feeling like I did something wrong in the last month.
6. Feeling worried or anxious in the last month.
7. Trying not to think in the last month.
8. Remembering upsetting or bad things that happened in the last month.

Note: All items were scored on a four-point scale ranging from "never" to "almost all the time." Copyright 2017 Sherry Hamby and Elizabeth Taylor. Reprinted by permission.