BRIEF REPORT

Examining Relationships Between Posttraumatic Stress Disorder Severity and Types of Media/Technology Usage

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Objective: Psychopathology, cyberpsychology, and mass media theories link psychological symptoms, such as posttraumatic stress disorder (PTSD), to increased media and technology usage (MTU). Given limited research in this area, we uniquely examined if specific MTU facets were associated with PTSD symptom severity. *Method:* A sample of 404 socioeconomically diverse adults (M_{age} = 35.89; 57.4% female) was recruited from Amazon's Mechanical Turk and completed the Life Events Checklist for *DSM–5*, Posttraumatic Stress Disorder Checklist for *DSM–5*, Media and Technology Usage and Attitudes Scale, and Patient Health Questionnaire-9. *Results:* Hierarchical multiple regression analyses indicated that, controlling for depression severity, greater frequency of TV viewing (p = .004) and media sharing (p = .040) and greater quantity of online friendships (p = .006) were associated with greater PTSD symptom severity. *Conclusion:* Study findings suggest that the extent of MTU behaviors (especially extent of TV use, media sharing, and online friendships) are important to examine in trauma-exposed individuals with PTSD symptoms. Results generalize to trauma-exposed community members and are considered within the context of current MTU theories.

Clinical Impact Statement

Study results suggest that it may be useful to expand current media and technology usage (MTU) theories to include posttrauma distress. Further, clinicians may benefit from further examining MTU behaviors among trauma-exposed individuals, particularly TV viewing, media sharing, and online friendships, in relation to posttraumatic stress disorder (PTSD) severity. Similar to other excessive and potentially maladaptive behaviors, these MTU behaviors may serve as distress avoidance strategies or as triggers for trauma memories adding to PTSD symptom severity.

Keywords: posttraumatic stress disorder, media usage, technology usage, trauma experiences, trauma-exposed

Supplemental materials: https://doi.org/10.1037/tra0001333.supp

Media and technology usage (MTU) represent behaviors involving technology-based platforms (Rosen et al., 2013). MTU is often categorized based on the types of or motives for technology-based platforms, such as video gaming (e.g., playing games through the computer or console; Lemmens et al., 2009) or Internet use (e.g., for a specific function vs. general multidimensional use; Davis, 2001). Evidence links a substantial amount of MTU (e.g., ≥ 5 hr of TV/digital screen time per day; Przybylski et al.,

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2020) to poor health such as depression, anxiety, and impaired psychosocial functioning (Andreassen et al., 2016; Caplan, 2003; Przybylski et al., 2020). Such substantial MTU can aid the avoidance of negative emotions/thoughts (García-Oliva & Piqueras, 2016), leading to maladaptive MTU patterns over time in individuals with poor mental health (e.g., Andreassen et al., 2016; Caplan, 2003).

Notably, limited research has examined MTU in the context of posttraumatic stress disorder (PTSD). Theories from the psychopathology, cyberpsychology, and media literature connect MTU to PTSD. Referencing the Cognitive-Behavioral Model, substantial MTU (e.g., compulsive computer-mediated social interaction) may be a consequence of psychopathology such as depression/social anxiety and may be maintained by negative cognitions (e.g., negative self-appraisal; Davis, 2001). Further, the Emotion Regulation perspective in the addiction literature (Yildiz, 2017) suggests that individuals may increasingly use media to cope with negative affect (Jun & Choi, 2015). Similarly, the Motivations for Play model suggests that MTU may become maladaptive when utilized to avoid negative thoughts (Yee, 2006). Connecting these theories together, the Interaction of Person-Affect-Cognition-Execution (I-PACE) model suggests that individuals may engage in excessive MTU due to complex interactions between biological and psychological predispositions, experiences, and reinforcements (e.g., genetic makeup, childhood trauma); such MTU can be maintained via positive reinforcement (Brand et al., 2016).

Extrapolating from and applying these aforementioned theories in the context of PTSD, individuals with PTSD symptoms may use media and technology to manage posttrauma symptoms. For instance, they may engage in MTU behaviors, similar to other potentially excessive and maladaptive behaviors, to cope with and avoid distressing emotions and cognitions (Ledgerwood & Milosevic, 2015). Additionally, conditions which commonly cooccur with PTSD, such as depression and anxiety (Ginzburg et al., 2010), are associated with substantial MTU (Elhai et al., 2017). Lastly, PTSD severity has been linked to excessive and maladaptive behavioral patterns such as gambling (Ledgerwood & Milosevic, 2015) and excessive smartphone use (Contractor et al., 2017). Clinically, it may be important to address MTU in trauma-exposed individuals as this may exacerbate PTSD symptoms in individuals who are already symptomatic (Davis, 2001; Lai et al., 2015).

Given this literature, we examined associations of MTU with PTSD symptom severity to determine which MTU facets were related with PTSD symptom severity. Based on psychopathology, cyberpsychology, and media theories linking health outcomes such as PTSD to MTU (e.g., Andreassen et al., 2016; Caplan, 2003), and evidence linking PTSD to maladaptive behavioral patterns (e.g., Contractor et al., 2017; Ledgerwood & Milosevic, 2015), we hypothesized that greater frequency/quantity of all MTU facets would significantly relate to greater PTSD symptom severity. Specifically, we hypothesized that greater frequency/quantity of smartphone use (Contractor et al., 2017), general social media use (Andreassen et al., 2016), and video gaming (Peng & Liu, 2010) would most strongly relate to greater PTSD symptom severity based on prior theory and empirical evidence.

Method

Procedure and Participants

This study was approved by the University of North Texas Institutional Review Board. Participants were recruited via Amazon's Mechanical Turk and completed an online Qualtrics survey ($1.25 compensation). Participants provided informed consent electronically. Participants were able to access the study if they (a) were ≥ 18 years old, (b) lived in North America, (c) were fluent in English, and (d) reported a traumatic event (on the Primary Care PTSD Screen for *DSM–5;* Prins et al., 2015).

Measures

Life Events Checklist for DSM–5 (LEC-5; Weathers et al., 2013b) is a 17-item self-report survey examining lifetime traumatic events. Participants rated items using the following options: *happened to me, witnessed it, learned about it, part of my job, not sure, doesn't apply* (Weathers et al., 2013b). Selecting any of the first four options was considered an endorsement of a traumatic event.

Posttraumatic Stress Disorder Checklist for DSM–5 (PCL-5; Weathers et al., 2013a) is a 20-item self-report survey examining PTSD symptom severity with a 5-point scale (0 = *not at all* to 4 = *extremely*). Participants referenced the most distressing traumatic event endorsed on the LEC-5. The PCL-5 has excellent psychometrics (Bovin et al., 2016). Cronbach's alpha for the total score was .96 in this study.

Media and Technology Usage and Attitudes Scale (MTUAS; Rosen et al., 2013) is a 60-item self-report measure of the extent of MTU (Rosen et al., 2013). The MTUAS has two sections: Usage and Attitudes. We utilized the Usage section, comprising 11 subscales. The first nine subscales (*E-mailing, Text Messaging, Phone Calling, Smartphone Usage, TV Viewing, Media Sharing, Internet Searching, Video Gaming, General Social Media Usage*) measure frequency of usage with a 10-point scale (1 = *never* to 10 = *all the time*). The other two subscales (*Facebook Friendships, Online Friendships*) evaluate quantity of Facebook-specific online friendships and generic online friendships with a 9-point scale (1 = 0 to 9 = 751 or more). Cronbach's alpha for the 11 subscale scores ranged from .64 to 94.

Patient Health Questionnaire-9 (PHQ-9; Kroenke & Spitzer, 2002) is a 9-item self-report survey examining depression symptoms in the past two weeks with a 4-point scale (0 = *not at all* to 3 = *nearly every day*). It has good psychometrics (Kroenke et al., 2001). Cronbach's alpha for the total score was .91.

Exclusions, Missing Data, and Statistical Analyses

See Supplemental Figure 1 for the data exclusion process. No item-level data were missing in the final sample (n = 404). See Supplemental Table 1 for demographic information. Data were analyzed using SPSS V25. Statistical assumptions of normality, homoscedasticity, and linearity were met. We ran two hierarchical multiple regressions to examine study hypotheses. In the first model, the nine MTUAS frequency of usage subscales were the predictors and PTSD symptom severity was the outcome variable. In the second model, the two MTUAS quantity of online

friendships subscales were the predictors and PTSD symptom severity was the outcome variable. We controlled for depression severity as it relates to MTU (e.g., Elhai et al., 2017) and PTSD symptom severity (e.g., Ginzburg et al., 2010).

Results

See Supplemental Table 2 for descriptives on study variables, Supplemental Table 3 for correlation estimates, and Table 1 for multiple regression results. In the first model, controlling for depression severity, greater frequency of TV viewing and media sharing were both significantly related to greater PTSD symptom severity. In the second model, controlling for depression severity, greater quantity of online friendships was significantly related to greater PTSD symptom severity.

Discussion

Broadly, current study findings suggest significant positive linear relationships between certain MTU facets and PTSD symptom severity. These findings are in line with existing cyberpsychology theories linking certain behavioral patterns (e.g., Internet use, video game use) to psychological symptoms, maladaptive cognitions, and coping (e.g., Davis, 2001; Jun & Choi, 2015). These findings are also in line with empirical evidence connecting PTSD symptoms to excessive and potentially maladaptive behavioral patterns (e.g., Contractor et al., 2017; Ledgerwood & Milosevic, 2015).

Specifically, greater frequency of online media sharing and TV use significantly related to greater PTSD symptom severity, controlling for depression severity. Perhaps, for trauma-exposed individuals, online media sharing and TV viewing could serve as a strategy to avoid distress-producing experiences and cues (e.g., social interactions, negative cognitions) to obtain relief from distressing emotions and thoughts (e.g., Volpicelli et al., 1999). Such

excessive and positively reinforcing usage of these technology facets (e.g., Davis, 2001; García-Oliva & Piqueras, 2016) could ultimately reinforce sustained engagement in these MTU behaviors (Davis, 2001). These patterns are in line with the I-PACE model of Internet-use disorders (Brand et al., 2016) and the Cognitive-Behavioral model of media use (Davis, 2001). Further, controlling for depression severity, a greater quantity of online friendships was significantly associated with greater PTSD severity in this study, which aligns with the Preference for Online Social Interaction Model (Caplan, 2003). This model suggests that individuals experiencing depression or loneliness, both associated with greater PTSD severity (Wang et al., 2021), may prefer to engage in online (vs. in-person) social interactions because it may be perceived as less threatening and more rewarding (Caplan, 2003). Thus, perhaps trauma-exposed individuals engage in online socialization to avoid in-person interactions perceived as threatening, which could possibly maintain or exacerbate PTSD symptom severity. This idea requires empirical investigation.

There are study limitations which should be considered. First, we used self-report measures, which could entail response biases and may not thoroughly capture examined constructs compared to objective measures (Ellis et al., 2019). Indeed, only a small amount of variance in PTSD severity was explained by the MTUAS subscales, limiting the practical implications of our findings. Second, our study was cross-sectional, and no determination of causality could be made. Third, there are concerns regarding the use of MTurk, such as data that could be lower in quality (Chmielewski & Kucker, 2020), no regulation of the research environment (Thomas & Clifford, 2017), participant deception tactics (e.g., falsifying eligibility; Hauser & Schwarz, 2016), programming designed to automatically complete online research surveys (Chmielewski & Kucker, 2020), and possible selection bias to individuals who have access to and are familiar with crowdsourcing platforms. However, MTurk is reliable and efficient in obtaining

Table 1

Hierarchical Multiple Regression Results of Relationships Between Media and Technology Usage and PTSD Severity (n = 404)

	B	SE	β	t	R^2	ΔR^2	F	ΔF
				Outcome variable = PTSD symptom severity				
Step 1					.55		**496.54, p < .001**	
Depression severity	2.32	.10	.74	**22.28, p < .001**				
Step 2					.59	.04	**56.03, p < .001**	**3.72, p < .001**
Depression severity	2.26	.10	.72	**21.66, p < .001**				
Emailing	−.11	.12	−.04	−.93, p = .355				
Text Messaging	−.08	.20	−.02	−.42, p = .697				
Phone Calling	.21	.25	.04	.85, p = .398				
Smartphone Usage	.02	.06	.01	.24, p = .813				
Television Viewing	.57	.20	.12	**2.88, p = .004**				
Media Sharing	.23	.11	.10	**2.06, p = .040**				
Internet Searching	−.23	.12	−.09	−1.96, p = .051				
Video Gaming	−.02	.12	−.01	−.18, p = .861				
General Social Media Usage	.04	.04	.04	.97, p = .334				
				Outcome variable = PTSD symptom severity				
Step 1					.55		**496.54, p < .001**	
Depression severity	2.32	.10	.74	**22.28, p < .001**				
Step 2					.56	.01	**171.83, p < .001**	**4.79, p = .009**
Depression severity	2.56	.11	.73	**21.61, p < .001**				
Facebook Friendships	−.04	.19	−.01	−.23, p = .820				
Online Friendships	.63	.23	.11	**2.74, p = .006**				

Note. PTSD is posttraumatic stress disorder; bolded values indicate significant results.

data from trauma-exposed samples (van Stolk-Cooke et al., 2018) and compares well to other traditional methods of data collection (Hauser & Schwarz, 2016).

Despite these limitations, our results have important implications. Our findings support the Emotion Regulation perspective (Yildiz, 2017) and the Cognitive-Behavioral model of media use (Caplan, 2003; Davis, 2001) and are clinically relevant in that, similar to other excessive behaviors, MTU may be a form of experiential and emotional avoidance that trauma-exposed individuals with PTSD symptoms engage in to cope with negative cognitions and emotions. These behaviors, in turn, may exacerbate PTSD symptom severity (Davis, 2001; García-Oliva & Piqueras, 2016; Lai et al., 2015) by preventing individuals from being exposed to upsetting trauma-related stimuli (e.g., thoughts, emotions, places). Without this therapeutic exposure to corrective information, individuals may not be able to process trauma-related content to decrease distress (Volpicelli et al., 1999). Thus, it could be beneficial to examine whether current MTU theories can be expanded to include posttrauma distress, and it may be helpful for clinicians to address the extent of MTU among individuals presenting with PTSD symptoms. Further, our trauma-exposed community sample was diverse in terms of socioeconomic status, gender identity, and index traumas. Nonetheless, future studies should endeavor to replicate our findings in other trauma-exposed populations (e.g., individuals with a PTSD diagnosis) to investigate the generalizability of current study results. Further, beyond MTU serving as an avoidance strategy, there could be other potentially viable explanations for the association between these constructs (e.g., increased exposure to trauma-related media may exacerbate PTSD symptoms). Future research should empirically examine the longitudinal relationship of MTU behaviors with PTSD symptoms in the context of a clinical trial to further understand these relationships and determine the potential clinical benefits of addressing MTU behaviors among trauma-exposed individuals.

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Appendix

Data Transparency Narrative Description

Manuscript	Narrative description
MS 1: Natesan Batley, P., Contractor, A. A., Weiss, N. H., Compton, S. E., & Price, M. (2021). Psychometric Evaluation of the Posttrauma Risky Behaviors Questionnaire: Item Response Theory Analyses. *Assessment*. Advance online publication. https://doi.org/10.1177/10731911211036760	MS 1 (published) focused on comparing posttrauma reckless and self-destructive behaviors using Item Response Theory in an Amazon Mechanical Turk (MTurk) sample and in a sample of trauma-exposed women reporting current intimate partner violence and substance use.
MS 2: Jin, L., Keegan, F. S., Weiss, N. H., Alghraibeh, A. M., Aljomaa, S. S., Almuhayshir, A. R., & Contractor, A. A. (2022). Examining indirect effects of emotion dysregulation between PTSD symptom clusters and reckless/self-destructive behaviors. *Psychological Trauma: Theory, Research, Practice, and Policy*, 14 (4), 688–695. https://doi.org/10.1037/tra0001118	MS 2 (published) focused on variables of posttraumatic stress disorder (PTSD) severity, emotion dysregulation, post-trauma reckless/self-destructive behaviors, alcohol misuse, and drug misuse. MS 2 examined the direct and indirect effects of emotion dysregulation between PTSD symptom clusters and reckless/self-destructive behaviors in an Amazon MTurk sample (including a subsample with probable substance use disorder).
MS 3: Contractor, A. A., Jin, L., Weiss, N. H., & O'Hara, S. (2021). A psychometric investigation on the diagnostic utility of the Posttrauma Risky Behaviors Questionnaire. *Psychiatry Research*, 296, 113667. https://doi.org/10.1016/j.psychres.2020.113667	MS 3 (published) focused on variables of PTSD severity, post-trauma reckless/self-destructive behaviors, alcohol misuse, drug misuse, disordered eating, problematic gambling, and compulsive buying behaviors. MS 3 examined the ability of a measure of post-trauma reckless/self-destructive behaviors to predict clinical (vs. nonclinical) levels of psychopathology in an Amazon MTurk sample.
MS 4: Contractor, A. A., Weiss, N. H., Natesan Batley, P., & Elhai, J. D. (2020). Clusters of trauma types as measured by the Life Events Checklist for DSM-5. *International Journal of Stress Management*, 27, 380−393. https://doi.org/10.1037/str0000179	MS 4 (published) focused on variables of post-trauma reckless/self-destructive behaviors, PTSD severity, depression severity, and negative/positive emotion dysregulation, MS 4 examined traumatic event type clusters and their relationships with psychopathology correlates in an Amazon MTurk sample.
MS 5: Armour, C., Greene, T., Contractor, A. A., Weiss, N. H., Dixon-Gordon, K. L., & Ross, J. (2020). Posttraumatic stress disorder symptoms and reckless behaviors: A network analysis approach. *Journal of Traumatic Stress*, 33, 29−40. https://doi.org/10.1002/jts.22487	MS 5 (published) focused on variables of post-trauma reckless/self-destructive behaviors and PTSD severity. MS 5 compared the relationships between PTSD symptom clusters and post-trauma reckless/self-destructive behavior using a network analytic approach in an Amazon MTurk sample.
MS 6: Contractor, A. A., Weiss, N. H., Kearns, N., Caldas, S. V., & Dixon-Gordon, K. L. (2020). Assessment of PTSD's E2 criterion: Development, pilot testing, and validation of the Posttrauma Risky Behaviors Questionnaire. *International Journal of Stress Management*. 27, 292−303. https://doi.org/10.1037/str0000145	MS 6 (published) focused on variables of post-trauma reckless/self-destructive behaviors, PTSD severity, depression severity, aggression, alcohol misuse, drug misuse, nonsuicidal self-injurious behaviors, disordered eating, technology-based media usage, compulsive buying, problematic gambling, reckless driving, risky

(Appendix continues)

Appendix (*continued*)

Manuscript	Narrative description
	sexual behavior, criminal behavior, and suicidal behaviors in an Amazon MTurk sample and a student sample. MS 6 focused on developing, pilot testing, and validating a measure of post-trauma reckless/self-destructive behavior, using an Amazon MTurk sample and a student sample.
MS 7: Contractor, A. A., Weiss, N. H., Dolan, M., & Mota, N. (2020). Examination of the structural relations between PTSD symptoms and reckless/self-destructive behaviors. *International Journal of Stress Management*, 27, 35−44. https://doi.org/10.1037/str0000133	MS 7 (published) focused on variables of post-trauma reckless/self-destructive behaviors and PTSD severity. MS 7 examined the best-fitting PTSD factor-analytical model and latent level relationships between PTSD symptom clusters and a unidimensional factor of post-trauma reckless/self-destructive behaviors in an Amazon MTurk sample.
MS 8: Contractor, A. A., Weiss, N. H., Dixon-Gordon, K., & Blumenthal, H. (2019). Heterogeneity in the co-occurrence of substance use and posttraumatic stress disorder: A latent class analysis approach. *Journal of Dual Diagnosis*, 15, 105−117. https://doi.org/10.1080/15504263.2019.1572258	MS 8 (published) focused on variables of post-trauma reckless/self-destructive behaviors, PTSD severity, alcohol misuse, drug misuse, depression severity, and aggression. MS 8 examined the construct validity of the best-fitting latent class solution in classifying individuals based on PTSD and substance use symptoms in an Amazon MTurk sample.
MS 9: Contractor, A. A., & Weiss, N. H. (2019). Typologies of PTSD clusters and reckless/self-destructive behaviors: A latent profile analysis. *Psychiatry Research*, 272, 682−691. https://doi.org/10.1016/j.psychres.2018.12.124	MS 9 (published) focused on variables of post-trauma reckless/self-destructive behaviors, PTSD severity, and depression severity. MS 9 examined the construct validity of the best-fitting latent class solution in classifying individuals based on PTSD symptoms and post-trauma reckless/self-destructive behaviors in an Amazon MTurk sample.