2019

Development and Validation of the Secondary Traumatic Stress Scale in a Sample of Social Media Users

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Recommended Citation

Mancini, Megan Nicole, "Development and Validation of the Secondary Traumatic Stress Scale in a Sample of Social Media Users" (2019). *ETD Archive*. 1132.
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DEVELOPMENT AND VALIDATION OF THE SECONDARY TRAUMATIC
STRESS SCALE IN A SAMPLE OF SOCIAL MEDIA USERS

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May 2017

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MASTER OF ARTS

at the

CLEVELAND STATE UNIVERSITY

May 2019

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Student's Date of Defense: May 8th, 2019

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ABSTRACT

This study examined the psychometric worth of a piloted measure, Secondary Traumatic Stress Scale for Social Media Users (STSS-SM). The STSS-SM is a 17-item instrument designed to measure intrusion, avoidance, and arousal symptoms associated with indirect exposure to traumatic events via social media use. Young adult social media users ($N = 144$) completed a survey containing the STSS-SM and measures of depression, trauma history, social media use, and demographics. A confirmatory factor analysis supported a three-factor model of secondary traumatic stress in social media users. Additionally, evidence for internal consistency and convergent and discriminant validity were found. These findings suggest the presence of secondary traumatic stress in social media users. Future research on the topic can be used to further understand the impact social media has on the psychological wellbeing of young adults and diminish the amount of distress social media users indirectly experience.

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CHAPTER I

INTRODUCTION

Individuals "can be traumatized without actually being physically harmed or threatened
with harm … they can be traumatized simply by learning about the traumatic event."
(Figley, 1995, p. 4)

Secondary traumatic stress (STS), has been researched thoroughly with samples

of helping professionals, (i.e., social workers, counselors, hospital workers, or first

responders) and family members. However, there is a dearth of research exploring the

other populations that may indirectly trauma. Currently, the DSM-5 criteria for Post-

Traumatic Stress Disorder (PTSD) includes indirectly traumatized individuals of familial

relation (Criterion A3), as well as individuals whose work has caused them to become

traumatized (Criterion A4; American Psychological Association (APA), 2013). The

inclusion of these individual muddies the distinction between PTSD and STS as it

essentially absorbs a majority of the prior research on STS. Given the specific

populations investigated in prior STS research and the PTSD inclusion criteria, there are

unclear boundaries in traumatology literature. This paper seeks to differentiate STS from

PTSD by exploring a new population: social media users. This population was chosen

because the Criterion 4A PTSD specifier states exposure to aversive details of traumatic

events does not apply to electronic media (APA, 2013). Specifically, a STS scale was

created and analyzed to investigate the role social media plays as a vessel for indirect trauma.

1.1 Secondary Traumatic Stress

Secondary traumatic stress is a construct coined by Charles Figley in the early '80s (Figley, Burgess, & Garrison, 1984). Figley's research interests began with the family system and then quickly turned towards traumatology, particularly war veterans. However, in 1982, he merged his interests in family with his interest in trauma and began exploring the effects close relationships can have on one's help in the wake of trauma during a keynote speech at a Texas conference. His ideas revolved around the conundrum that comes with family members playing a role in the recovery process of a catastrophe. In his 1986 book, *Trauma and Its Wake II,* Figley suggests that the social support system an individual has, namely one's family, is the single most important factor when emotionally recovering from a traumatic experience. The chapter explores other common ideas associated with catastrophe, but he brings up an important question: "Are the family members of survivors of catastrophe susceptible to being traumatized themselves?" (Figley, 1986, p. 40). He purports that families are just as vulnerable to being traumatized in their efforts as they are effective in helping a traumatized member conquer their fears, and this is due to one simple factor: love. Figley (1986) delves in to the basis of love and discovers that empathy is what makes family members so effective, yet vulnerable when trying to heal a traumatized member. He describes empathy as the Achilles' heel for families and concludes that families of trauma can simultaneously be victims of trauma. Albeit, the trauma does not have to be experienced firsthand, it can be

experienced through another family member. This realization was the seedling of an idea that blossomed into what we now call STS.

Research on traumatology has produced various terms to describe the psychological distress elicited by indirectly experiencing trauma, including, but not limited to, secondary traumatic stress, compassion stress, secondary traumatic stress disorder, compassion fatigue, burnout, vicarious trauma, secondary victimization, and traumatic countertransference. While these terms have often erroneously been used interchangeably in the literature, the following paragraphs will explore the various definitions used to describe each individual construct.

Figley (1995) asserts that secondary trauma is simply trauma experienced indirectly. In terms of the family system, he describes this phenomenon as arising when one member "infects" other members with distress following a traumatic event (Figley, 1995, p. 5). Additionally, he proposes that compassion fatigue is a disorder resulting from secondary traumatic stress. He defines it as

> the natural behaviors and emotions that arise from knowing about a traumatizing event experienced by a significant other – the stress resulting from helping or wanting to help a traumatized person (Figley, 1995, p. xiv).

This definition suggests that empathy plays a large role in the development of compassion fatigue. Figley (1986) implies that empathy is a family's Achilles' heel. He believes that love is what makes individuals susceptible to becoming traumatized when trying to help their family members overcome highly stressful experiences, and empathy, or compassion, is the root of love (Figley, 1995). Due to this, Figley refers to secondary traumatic stress as compassion stress and secondary traumatic stress disorder as compassion fatigue in his later work.

Figley (1995) argues that compassion fatigue and STS disorder are identical and are also equivalent to PTSD. He supported this stance with the DSM-IV PTSD diagnostic criteria which noted that various ways individuals can experience trauma, both directly and indirectly. In his research, he discovered that symptoms of STS mirror the primary trauma victim's PTSD symptoms, similar to other phenomena that seemingly develop as a result of empathy (Figley, 1995). Examples include couvade and folie à deux. Couvade occurs when a man goes through certain rituals and even appears to exhibit physical symptoms of gestation out of sympathy for his pregnant wife (Lipkin & Lamb, 1982). Folie à deux comes from the French phrase "family madness" and is used to describe shared psychosis between a couple. It appears when a psychiatric syndrome, such as delusions or hallucinations, are transmitted from one individual to another (Gralinick, 1942).

Newell and MacNeil (2010) define burnout as "a state of physical, emotional, psychological, and spiritual exhaustion resulting from chronic exposure to…populations that are vulnerable or suffering" (p. 58). The authors suggest that burnout occurs as a progressive phenomenon that occurs cumulatively overtime with three distinct domains: emotional exhaustion (depleted emotional resources due to the chronic needs, demands, or expectations of oneself, others, an organization, or a combination of the three), depersonalization (negative, cynical, and detached responses), and reduced sense of personal accomplishment (feelings of inadequacy despite effort). Like compassion fatigue, burnout appears to be a severe reaction to STS.

McCann and Pearlman (1990) define vicarious traumatization as a change in an individual after empathetically engaging with a survivor of trauma. Newell and MacNeil

(2010) elaborate on this and note that the change is in one's thought process due to chronic engagement with traumatized individuals. It appears that the main difference between STS and vicarious trauma is that STS has to do with behaviors, specifically the symptoms that mirror PTSD, and vicarious trauma involves a change in the cognitive process. Both, however, result from empathetically attending to victims of trauma. Albeit, the terms are used interchangeably, as previously mentioned.

STS symptoms may include intrusive thoughts, traumatic memories or nightmares associated with the primary victim's trauma, insomnia, chronic irritability, angry outbursts, fatigue, difficulty concentrating, avoidance of victim or situations related to the primary victim's trauma, being easily startled by stimuli associated with the primary victim's trauma, and hypervigilance reminders of victim's trauma (APA, 1994; Bride, 2007; Rothchild, 2000; Figley, 1995). For the purpose of this paper, the term secondary trauma will be used to describe the psychological distress that results when an individual is exposed to the firsthand trauma experiences of another individual.

Bride, Robinson, Yegidis, and Figley (2004) developed a scale to scale to measure STS called the Secondary Traumatic Stress Scale (STSS). The STSS is a 17-item, self-report instrument that assesses the secondary traumatic stress experienced by helping professionals via a 5-point Likert scale (1 = *never*; 5 = *very often*). The instrument contains a total scale score and three subscales: Intrusion (5 items), Avoidance (7 items) and Arousal (5 items). The designated items of each scale are summed to generate scale scores with higher scores indicating more symptoms of STS. These subscales were chosen based on Figley's (1995) assertion that symptoms of STS mirror

those of PTSD and are congruent with the DSM-5's conceptualization of PTSD symptoms.

Bride, Robinson, Yegidis, and Figley (2004) reported strong reliability and validity for the STSS. Internal consistency alphas were within the range of .80 to .93 (Full STSS α = .93; Intrusion α = .80; Avoidance α = .87; Arousal α = .83). The authors ran correlation analyses to determine convergent and discriminant validity and used the Bonferroni technique to limit Type I error risk. The alpha level was calculated to be .00179 (.05/28) and revealed significant correlations in the convergent variables (extent to which respondent's client population is traumatized, frequency with which respondent's work with clients addresses traumatic stress, the severity of depression symptoms experienced by the respondent, and the severity of anxiety symptoms experienced by the client) and no significant correlations between the discriminant variables (respondent's age, ethnicity, and income). Additionally, the authors determined the STSS's factor structure was adequate. STSS items statistically significantly loaded on their intended factors: a) Intrusion items ranged from .58 to .76; b) Avoidance items ranged from .63 to .76; c) Arousal items ranged from .63 to .79 (Bride, Robinson, Yegidis, & Figley, 2004).

1.2 Social Media

According to an article published on global social media usage, there are more than 4 billion internet-users worldwide (Kemp, 2018). Considering there are nearly 8 billion people on Earth, this statistic suggests that over half of the planet's population is online. The data shows that 2017 alone brought a quarter of a billion new users to the internet (Kemp, 2018). While there is no one definitive reason as to why there has been

such a staggering increase in internet usage, there are plenty of possibilities. For one, smartphones have become the norm; it is now an anomaly when an individual's cell phone *doesn't* have internet access. Having a device that makes internet access so readily available because it's quite literally in the palm of one's hand likely plays a large role in worldwide Internet usage. Another possibility for this surge is due to social media. Social media is "a group of Internet-based applications … that allow the creation and exchange of user-generated content" (Kaplan & Haenlein, 2010, p. 61). Kemp (2018) reports that in the last year, there have been almost 1 million new users every day on social media platforms with more than 3 billion people around the world using social media each month.

Not only has there been an increase in users, but there has been an increase in the amount of time that users spend online. One study reported that 95% of young adults access the internet daily. Not only do most young adults have access, but nearly half claim to be online almost constantly (Anderson & Jiang, 2018). Another study estimates that, on average, internet users spend roughly six hours per day online (Kemp, 2018). This same study reported that the majority of social media users are between the ages of 18 to 34, suggesting that social media platforms are mainly used by young adults. Social media has become so intertwined with the current American culture that it's nearly impossible to separate the two. With so many individuals having access to smartphones, social media has become one of the main forms of engagement, whether that be political discussion, news media outlets, or personal entertainment. The internet habitually shows traumatic events in the most vivid ways. People no longer have to experience the trauma firsthand to feel its negative effects with social media; they can have the same symptoms

through indirect exposure. In other words, social media users are at risk of experiencing the effects of secondary trauma.

Developmentally, young adulthood is a very difficult and confusing time: individuals are trying to balance fitting in with peers while finding their independence. Although social media may appear to bridge that gap and make this trying time easier, it often has the opposite effect. Nearly a quarter of young adults reported that social media had a negative effect on them, noting that social media contributes to bullying, the distortion of reality, and peer pressure among other things (Anderson & Jiang, 2018). Social media may be much more deleterious than the individuals using it are aware. In particular, social media users may be indirectly experiencing traumatic events when they see distressing posts online. Although there are restrictions about what can be posted on certain social media sites, posts aren't as regulated as they should be. Even posts that are permitted can elicit traumatized responses. For example, mass shootings, homicide, suicide, sexual assault, and mental illness are broadcast over social media every day.

Despite its origin in Figley's research on the family system, secondary trauma has primarily been researched as an occupational hazard, particularly for those in helping professions. Individuals in human service professions, such as therapists, social workers, nurses, and doctors, have been studied for the past three decades. However, with the rollout of the DSM-5, the specifications of PTSD changed. Now, PTSD can only be diagnosed if the indirect exposure is work- or family-related. The diagnosis specifically states that "experiencing repeated or extreme exposure to aversive details of the traumatic event(s)…does not apply to exposure through electronic media, television, movies, or pictures, unless this exposure is work related" (APA, 2013, p. 271). The addition of this

criterion appears to consume much of the previous literature on secondary trauma and categorize it as PTSD. Despite this, secondary trauma can affect anyone who hears the recounting of traumatic experiences, not just those in a professional setting or family system. Moreover, according to Figley's (1995) postulation on what makes individuals more susceptible to experiencing secondary trauma, those who are highly empathetic are at an even greater risk. Social media users often connect with friends and family and follow accounts that post on topics they care about. This seemingly minor interest-factor that is involved with social media use in conjunction with the amount of time spent online may actually increase an individual's likelihood of experiencing STS.

1.3 Review of the Literature

One study determined that time spent with counseling trauma victims was the best predictor of secondary trauma (Bober & Regehr, 2005). This can be linked to the time spent on social media, engaging in traumatic posts/news stories. Bober and Regehr (2005) describe the immediate symptoms of secondary trauma as intrusive imagery, nightmares, increased fears for the safety of oneself and loved ones, avoidance of violent stimuli in the media, difficulty listening to clients' accounts of events, irritability, and emotional numbing. Longer term reactions can include emotional and physical depletion, a sense of hopelessness, and a changed worldview in which others are viewed with suspicion and cynicism. The authors not only note time as a factor, but availability of social support, personal histories of trauma and abuse, and the perception that the therapist had adequate training to effectively assist victims, thereby reducing the sense of hopelessness that may accompany this work. Interestingly, age was negatively associated with the secondary trauma experienced, suggesting that the older the therapist was, the

less secondary trauma they experienced. This may indicate that adolescents/young adults are more at risk for experiencing secondary trauma than adults/older adults.

1.4 Compassion Fatigue Process

Figley (1995) developed a model to explain the process of trauma transmission, as well as account for the development of STS in some but not all individuals. This Compassion Fatigue Process is rooted in the concept of empathy and suggests that family members and helping professionals are so vulnerable to developing STS because they attempt to understand what the primary trauma victim is experiencing by identifying with them. Figley (1995) reports that this is done by asking oneself five victim questions (What happened? Why did it happen? Why did I act as I did then? Why have I acted as I have since? If it happens again will I be able to cope?) to truly empathize with the primary trauma victim and adapt one's behavior to fit the answers. Because the individual is putting themselves in the primary trauma victim's shoes, they will actually experience symptoms mirroring those of the primary trauma victim (Figley, 1995).

The Figley Institute (2012) provides a figure of compassion stress and fatigue to represent his model. The model suggests that compassion stress results from ten interacting factors: emotional contagion, empathetic concern, empathetic ability, empathetic response, disengagement, sense of achievement, compassion stress, prolonged exposure, traumatic recollections, and life distribution. The first three factors, emotional contagion, empathetic concern, and empathetic ability result in the empathetic worker's response. Emotional contagion is experiencing the feelings of the suffering as a function of exposure to the sufferer. Empathetic concern is the motivation to respond to people in need. Empathetic ability is the aptitude for noticing the pain of others. In the next phase

of the model, the empathetic worker's response, in conjunction with the worker's sense

of satisfaction and detachment, lead to residual worker compassion stress. The

empathetic response is the extent to which the helper makes an effort to reduce the

suffering of the sufferer. Sense of achievement is the extent to which the helper is

satisfied with his or her efforts to help the sufferer. Disengagement is the extent to which

the helper can distance himself or herself from the ongoing misery of the traumatized

person. Compassion stress is the demand for action to relieve the suffering of others.

Finally, the worker's compassion stress, combined with prolonged exposure of suffering,

traumatic recollections, and other life demands, results in the worker developing

compassion fatigue.

Prolonged exposure is the on-going sense of responsibility for the care of the

suffering over a protracted period. Traumatic recollections are the memories that trigger

the symptoms of PTSD and associated reactions, such as depression and generalized

anxiety. Life disruptions are the unexpected changes in schedule and routine as well as

the management of life responsibilities that demand attention (i.e., illness, changes in life

style, social status, or professional/personal responsibilities). The culmination of the nine

other factors results in the emotional and physical exhaustion that can affect helping

professionals and caregivers over time, or compassion fatigue (Figley, 2001).

CHAPTER II

CURRENT STUDY AIMS

The empirical literature recognizes a connection between experiencing a traumatic event, whether direct or indirect, and the subsequent development of symptoms. However, there is a dearth of research on indirect trauma as it affects populations outside helping professionals. Likely, this is due to the fact that the DSM-5 does not consider indirect exposure to trauma outside of family or work to fulfill the exposure criterion for a PTSD diagnosis (APA, 2013). It is unclear why this specification was made. Potentially, the authors of the DSM-5 believe that family members of and professionals involved with trauma victims are more susceptible to developing trauma symptoms due to the amount of time spent with the primary trauma victims. Similarly, the authors may believe these individuals are more at-risk due to their higher levels of empathy toward the primary trauma victim.

Whatever the reason, the gap in the research on STS is large and problematic. With researchers only investigating samples of helping professionals and family members, they are not supporting STS as a differential construct from PTSD according to Criterion A of PTSD. This criterion states that PTSD can result from learning of an event that traumatized a close family member or experiencing intense, continuous exposure to

unpleasant details of a traumatic event related to one's work (APA, 2013). By

continuously studying populations of helping professionals and family members,

investigators are simply supporting the criterion validity of PTSD rather than exploring

populations that may be affected by STS and considering the generalizability of the

construct.

This study seeks to begin filling the gaps in STS research and add to the literature

by examining STS in a sample of social media users. An instrument to measure STS in

social media users, based on a scale created by Bride and colleagues (2004), will be

piloted and psychometrically analyzed. Superficially, the structure of the piloted scale

will be examined to determine if it is the same as STSS; in other words, a three-factor

structure will be investigated. Specific subscales will be examined to determine if they

are differentially related to social media use and mental health symptoms, specially

depression. This study will be guided by one hypothesis: The piloted measure will

indicate three factors of STSS and show similar patterns of convergent and discriminant

validity as the original STSS.

CHAPTER III

METHOD

3.1 Participants

Participants were recruited through various online forums where a post was made briefly describing the study and its inclusion criteria. These forums included Facebook, Twitter, and Instagram. Additionally, Cleveland State University students had the opportunity to participate in the survey to earn 0.5 points of course credit or extra credit through the Cleveland State University Psychology subject pool. On their own time, participants completed an online survey lasting approximately 15 minutes. The survey included measures of STS, depression, social media use, trauma history, and demographics. The Statistical Package for Social Science (Version 25; IBM Corp, 2013) and AMOS (Version 25; Arbuckle, 2014) were used to analyze the data and evaluate the piloted scale's psychometric worth.

Participants were young adult social media users. Of the 182 respondents who began the survey, 38 participants were excluded, including those who did not give consent, who did not fall between the ages of 18 and 26, who did use at least one form of social media at least three days a week, or who had more than one item missing were excluded. Study participants (N = 144) had a mean age of 21.21 (SD = 2.36) and were

primarily female (75%). Regarding education level, 17.4% of the respondents reported their highest completed education level being a high school diploma or GED; 44.4% were current undergraduate students; 33.3% had earned a Bachelor's or Associate's degree; and 4.2% reported earning a Master's, Professional, or Doctoral degree. Additionally, the sample consisted largely of Caucasian (79.2%) individuals, with a smaller proportion identifying themselves as African American (8.3%), Hispanic/Latino (5.6%), Asian (3.5%), or Other (3.5%). Participant characteristics are displayed in Table 1.

3.2 Measures

Secondary traumatic stress scale. The purpose of the current study was to pilot a measure of STS in social media users. The Secondary Traumatic Stress Scale for Social Media (STSS-SM) was generated based on Bride and colleagues (2004) Secondary Traumatic Stress Scale (STSS). The STSS-SM is a 17-item, self-report instrument that assesses the secondary traumatic stress experienced by social media users via a 5-point Likert scale (1 = *never*; 5 = *very often*). Like the original STSS, the instrument contains a total scale score and three subscales: Intrusion (items 2, 3, 6, 10, 13), Avoidance (items 1, 5, 7, 9, 12, 14, 17) and Arousal (items 4, 8, 11, 15, 16). Although the STSS-SM items draw directly from items on the STSS, stems were added to relate the construct to social media users. For example, item 2 on the STSS which states "My heart started pounding when I thought about my work with clients" was changed to "My heart started pounding when I thought about things I've seen on social media." The revised measure can be seen in Appendix C with modifications bolded. The designated items of each scale are summed to generate scale scores with higher scores indicating more symptoms of STS.

Center for epidemiologic studies depression scale (CES-D). Developed in 1977 by Lenore Radloff, the CES-D measures an individual's current level of depressive symptomology with responses scored from zero to three on a scale of frequency of occurrence of the symptom within the last week (0 = *Rarely or None of the time [less than 1 day]*; 3 = *Most of All of the Time [5-7 Days]*). It utilizes 20 self-report items that evaluate depressed mood, feelings of guilt and worthlessness, feelings of helplessness and hopelessness, psychomotor retardation, loss of appetite, and sleep disturbance (Radloff, 1977). The items are summed with possible scores ranging from zero to 60. Higher scores indicate more symptoms of depression during the past week. Radloff (1977) suggests a cutoff score of 16 or greater to aid in identifying individuals at risk for clinical depression. The CES-D can be viewed in Appendix D.

Previously, the CES-D was given to two groups: a general population sample and a patient sample. Radloff (1977) reported that inter-item and item-scale correlations were higher in the patient sample. Additionally, the general population sample's coefficient alpha was .85 and the patient sample's coefficient alpha was .90, indicating high rates of internal consistency. Another test of reliability, test-retest, indicated moderate correlations, ranging from .51 to .67 (Radloff, 1977). Overall, the CES-D is a reliable, valid, and generalizable measure (Radloff, 1977).

Demographics and social media. In addition to the measures described above, participants were asked to complete an 8-item survey seeking information regarding demographics, social media use, and trauma which can be viewed in Appendix E. Respondents were asked about their gender, age, ethnicity, and highest completed level of education. They were given a list of social media platforms and instructed to indicate

which they currently used and, on average, how much time they spent of social media each day. Participants' previous trauma was recorded with the yes-or-no-question, "Have you ever experienced anything that was very scary, dangerous, or event violent, where someone was hurt very badly or killed, or could have been?" If previous trauma was endorsed, participants were instructed to indicate how their experience impacted their ability to sleep or talk with others using a 5-point self-anchored rating scale (*1 = it has not impacted you at all, 5 = it has impacted you a lot*).

3.3 Analytic Procedure

To determine the factor validity of STSS-SM, a confirmatory factor analysis (CFA) was run. A CFA examines underlying constructs of variables. Based on theory, three models were developed to represent the best fit for the overall data. Model 1 was a one factor model of STS indicated by all 17 observed variables and was used as a baseline comparison against the other models. Model 2 was a two-factor model divided by social media related items and non-social media related items. The following observed variables were related to the latent construct 'social media related items': items 1, 2, 3, 6, 10, 12, 13, 14, 17, whereas items 4, 5, 7, 8, 9, 11, 15, 16 were related to the latent construct 'non-social media items.' Model 3 drew directly from the hypothetical underlying constructs for STS proposed by Bride and colleagues (2004). This three-factor model suggests the latent factors of Intrusion, Avoidance, and Arousal as defining STS in social media users. Intrusion is indicated by the observed variables 2, 3, 6, 10, and 13; Avoidance is indicated by the observed variables 1, 5, 7, 9, 12, 14, and 17; and Arousal is indicated by the observed variables 4, 8, 11, 15, and 16. A path diagram of the three-factor model is presented in Figure 2. For both Model 2 and Model 3, all manifest

variables were freely estimated and loaded on only one latent variable. The latent constructs were allowed to correlate. All manifest variables were ordinal.

Maximum Likelihood Estimates were used to determine factor loadings, beta weights, covariances and correlations among the latent variables, and squared multiple correlations. Several fit indices were selected in order to test which CFA model best represents the present dataset: root mean square error of approximation (RMSEA), comparative fit index (CFI), Akaike information criterion (AIC), and the model chi square. RMSEA is an approximate fit index and is not sensitive to sample size. The RMSEA can range from 0 to positive infinity; values of .05 to .08 or smaller indicate close fit (Schumacker & Lomax, 2010). CFI evaluates model fit to a baseline model and is based on the noncentral chi square distribution. It ranges from 0 to +1.0 with values greater than .90 suggest good model fit (Hu & Bentler, 1999). AIC is a comparative fit model that will be used to help determine which of the three models has the best fit. AIC values closer to zero indicate better model fit. The model chi square test tests the null hypothesis. When statistically significant, this indicates that that the predicted covariance matrix and the sample variance-covariance matrix are not equal. This means that the model being tested does not fit the hypothesized model, thus the null hypothesis is rejected (Hahs-Vaughn, 2017).

Once the factor structure was identified, additional psychometric properties were examined. To determine reliability, the internal consistency of STSS-SM and if applicable, its identified subscales was measured. Internal consistency reflects scale items' inter-correlations, often reflected in the coefficient alpha statistic. Cronbach's alpha was computed in order to evaluate how consistently the STSS-SM measures the

identified constructs of STS in social media users. Nunally and Bernstein (1994) suggest an alpha level of at least .80 to be considered appropriate internal consistency.

Measures of construct validity, including convergent and discriminant validity, evaluated STSS-SM's validity. Previous research suggests that history of trauma (Good, 1996), time spent interacting with primary victims of trauma (Bober & Regehr, 2005), and symptoms of depression (Davidson & Fairbank, 1993) are positively correlated with the presence of STS symptoms. Theoretically, STSS-SM will share a relationship with prior trauma, time spent on social media, and symptoms of depression. Additionally, studies suggest no correlation between STS and ethnicity (Knight, 1997), income (Pearlman & Mac Ian, 1995), or age (Good, 1996; Knight, 1997; Munroe, 1990; Pearlman & Mac Ian, 1995). This suggests that, in theory, STSS-SM will be unrelated to ethnicity, gender, education level, and age of participants.

CHAPTER IV

DATA ANALYSIS RESULTS

4.1 Confirmatory Factor Analysis

Prior to conducting the confirmatory factor analysis (CFA), the data were

screened to determine the extent to which the assumptions associated with CFA were

met. These assumptions included (a) independence, (b) linearity, (c) multivariate

normality, and (d) lack of multicollinearity and singularity. Independence was assumed

to be met. Scatterplots of each latent variable were generated and generally suggested

that the assumption of linearity was feasible, as there was no evidence of curvilinear or

other nonlinear relationships. Standard scores of each variable were computed and

analyzed to assess the presence of outliers. In three cases, Z-scores with absolute values

of 3.29 or greater were flagged as outliers. However, these items were retained as the

Maximum Likelihood Estimation is relatively robust to moderate departures of

multivariate normality. Extreme multicollinearity was screened for by conducting a

series of multiple regression models, one regression model for each variable where that

variable is the dependent variable and all other variables are the independent variables.

There were no multiple R^2 values that were close to one; all were under .50, suggesting

no problems with multicollinearity. To prevent singularity, none of the composite

variables and their component variables were used as predictors in the same factor analytic model.

A CFA was performed to assess the factor structure of the STSS-SM. According to the fit indices (Table 2), Model 2 was a better fit for the overall data set compared to Model 1. Model 2 has a lower RMSEA value (.08), a higher CFI value (.90), a lower AIC (299.29), and a lower significant chi-square (χ^2 (118) = 229.29, $p < .001$). Still better, though, was the fit of Model 3 in terms of fit indices (RMSEA = .08, CFI = .92, AIC = 287.13) and the model chi-square ((χ^2 (116) = 213.13, $p < .001$). From these results, Model 3 was selected as the best fit for the data.

It should be noted that the latent variables in the three-factor model did not appear to be unique. Analyses revealed strong correlations between intrusion and arousal ($r =$ .83), intrusion and avoidance ($r = .89$), and arousal and avoidance ($r = .98$). Table 3 displays the latent variable covariances, standard errors, critical ratios, and p-values further suggesting an overlap in the factors of Model 3. However, given the strong theoretical framework of this model, Model 3 was used in subsequent analyses. Standardized regression weights, means, and standard deviations for the three-factor model are displayed in Table 4. The factor loadings, covariances, squared multiple correlations, and variances explained by item redundancy are displayed in Figure 1.

4.2. Reliability Analysis

Table 5 is a display of the Pearson correlation coefficients among the seventeen items of the STSS-SM. Means, standard deviations, and alpha levels for the STSS-SM and its subscales were as follows: Full STSS ($M = 39.90$, $SD = 12.83$, $\alpha = .92$), Intrusion ($M = 11.05$, $SD = 4.43$, $\alpha = .88$), Avoidance ($M = 16.55$, $SD = 5.43$, $\alpha = .80$), and

Arousal (M = 12.31, SD = 4.22, α = .79). Guided by Nunally and Bernstein's (1994)

suggestion, these results suggest the STSS-SM and its subscales have homogenous items

which reflect a common, underlying construct.

4.3 Validity Analysis

Correlation matrices supported convergent validity between STSS-SM total score

and the following: symptoms of depression (r = .63, p < .01), having previously

experienced a traumatic event (r = -.18, p = .04), and impact of prior trauma (r = .33, p <

.01). The negative correlation between the level of STS symptoms related to social

media and having experienced a prior trauma occurred because of the way prior trauma

was coded in the analysis. A response of "Yes" was coded as 1, while a response of

"No" was coded as 2. Additionally, because time spent on social media was recorded as

a string variable, it was auto-recoded as a numeric variable in order to run a correlation

analysis. The results indicated a statistically significant relationship between STSS-SM

and time spent on social media (r = .25, p = .003). The correlation matrices also

supported divergent validity between STSS-SM total score gender (r = .13, p = .13) and

age (r = -.002, p = .98). These results are presented in Table 5. Further, one-way

ANOVAs did not reveal a significant effect of ethnicity (F(4, 139) = .67, p = .61) or

education (F(5, 137) = .88, p = .49) on STSS-SM.

CHAPTER V

DISCUSSION

Traumatology literature suggests a connection between PTSD and STS; specifically, the development of STS was based on the theoretical underpinnings of PTSD. Prior research holds that symptoms of STS can be conceptualized by three factors: intrusion, avoidance, and arousal (Figley, 1995). The present study aimed to determine the psychometric worth of a piloted measure, STSS-SM, to assess STS in populations outside of veterans' family members and those in helping professions for two reasons: (a) to expand the current knowledge of STS; and (b) to help differentiate between STS and the current diagnostic criteria of PTSD. Therefore, it is strongly suggested that the results of this study are not generalized to populations outside of the current sample that was being investigated (i.e., young adult social media users). The inclusion of other groups, (e.g., individuals who regularly watch or read the news; individuals who may have been traumatized after watching a movie or television show) may have led to different results. Future studies should be conducted to investigate STS, using novel samples or a more generalizable measure, in order to continue adding to the STS literature and clarify the distinction between STS and PTSD.

The results of the analyses indicate that the STSS-SM is an adequate measure of STS in social media users based on a three-factor model of intrusion, avoidance, and arousal. Reliability and validity results suggest STSS-SM is an internally consistent measure and holds that STS is related to depression symptoms, time spent on social media, prior trauma experience, and the impact of one's trauma experience. Additionally, results were consistent with prior research on discriminant validity, showing no relationship between STS and ethnicity, gender, education level, or age. Interestingly, time spent on social media was not correlated to the amount of STS that an individual reported experiencing ($r = .15, p = .07$). Future research investigating other factors related to STS in social media users can help broaden the empirical knowledge regarding social media's impact on the psychological wellbeing of young adults and potentially ameliorate the effects of indirect trauma.

While the present study aligned with findings in previous research on STS, it was not without limitations. One of the limitations of the present study was the sample, namely the size but also the lack of diversity. Only 143 of the 182 respondents were included in the analysis due to exclusion criteria and missing responses. Sample size requirements of CFA vary, but general recommendations suggest an absolute sample size of at least 200 participants (Boomsma, 1983). Other recommendations include at least 10 participants per observed variable (Nunnally, 1967) or at least 5 participants for every parameter estimated (Bentler & Chou, 1987). While the sample is clearly below the 200-participant mark, neither does it meet the 170-participant (17 items x 10 participants) mark suggested by Nunnally (1967), nor the 285-participant (57 parameters x 5 participants) mark suggested by Bentler & Chou (1987). In addition to having an

inadequate small sample size, this study was limited by an extremely homogeneous sample. Participants were primarily Caucasian (79.1%) female (75%) undergraduate students (44.4%). Future studies should be conducted with a larger sample size to produce more robust findings, as well as use quota sampling to attain a more generalizable sample.

Another limitation with this study was the way certain variables were measured. For example, the item where participants reported time spent on social media was intended to be an interval variable ranging from less than one hour to more than eight hours with seven groups; however, when presented on SurveyMonkey, the item was not categorical. It appeared as a scale that ranged from zero to one hundred with anchors "less than one hour" and "more than eight hours" (see item 5 in Appendix E for example. Because of the way this item was presented on SurveyMonkey, it appeared as a string variable in the SPSS dataset and had to be auto-recoded. Although the variable was still able to be analyzed and produced expected results, the findings may not be accurate. To remedy this, questions should be asked in a clear, easy to understand format with provided responses in well-defined groups. A similar limitation was the lack of operational definitions, particularly for social media and trauma. Participants were not given a concrete operational definition of social media; therefore, the way items were answered may vary due to subjective experiences or thought processes. Additionally, trauma items measuring prior experience and impact were drawn from the Reaction Index from Steinberg, Decker, and Pynoos (2004). While these items are validated, they may not have been appropriate or clear enough for the given study. Future studies should include operational definitions for all constructs to assure that participants are not

bringing unwanted, subjectivity to their responses and that items are being answered in a similar light.

The final limitation of this study was the lack of uniqueness between the latent variables. While the analyses revealed that STSS-SM could be adequately grouped into three variables, there was significant overlap within those variables. This indicates that intrusion, avoidance, and arousal are not unique enough to be considered different exclusive factors or groups of STS symptoms in social media users. Future researchers may wish to run an exploratory factor analysis to determine the number of factors in the STSS-SM. Understanding the underlying features of STS in social media users is an important goal for future research. It is clear that young adults are indirectly experiencing trauma related to social media use, but it is unclear how the observed variables of STSS-SM are interacting. Being able to identify clear, singular constructs may help with determining ways to reduce STS in social media users. With how prevalent social media is in the current culture, it would be theoretically impossible to eliminate the frequency with and extent to which individuals use social media. Because of this, the only option appears to be studying the factors contributing to, the underlying constructs of, and the techniques that may contribute to lower amounts of STS.

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Table A1.

Participant Characteristics

Characteristic	N	%
Age (*M* = 21.21, *SD* = 2.36)	144	
18	16	11.1
19	40	27.8
20	10	6.9
21	10	6.9
22	12	8.3
23	26	18.1
24	19	13.2
25	8	5.6
26	3	2.1
Gender	144	
Male	36	25
Female	144	75
Ethnicity	144	
African American	12	8.3
Asian	5	3.5
Caucasian	114	79.2
Hispanic/Latino	8	5.6
Other	5	3.5
Education Completed (*M* = 3.34, *SD* = 1.64)	143	
HS Diploma/GED	25	17.4
College Freshman	33	22.9
College Sophomore	13	9
College Junior	18	12.5
Bachelor's/Associates	48	33.3
Master's/Professional/Doctorate	6	4.2

Table A2.

Fit Indices for Confirmatory Factor Models

	RMSEA	C.I.	CFI	AIC	df	χ^2	p
Model 1	.090	.075-.106	.879	326.136	119	258.136	<.001
Model 2	.081	.065-.097	.903	299.287	118	229.287	<.001
Model 3	.077	.060-.093	.915	287.126	116	213.126	<.001

Note. RMSEA = Root Mean Standard Error of Approximation; CI = confidence interval; CFI = Comparative Fit Index; AIC = Akaike Information Criterion

Table A3.

Covariances of Latent Variables in the Three-Factor Model

	Estimate	Standard Error	Critical Ratio	p
Intrusion ↔ Arousal	.564	.106	5.348	< .001
Intrusion ↔ Avoidance	.436	.081	5.348	< .001
Avoidance ↔ Arousal	.416	.086	4.856	< .001

Table A4.

Beta Weights, Squared Multiple Correlations, Means, and Standard Deviations for Three-Factor Model of STSS-SM

Item	Intrusion	Avoidance	Arousal	R^2	M	SD
2. My heart started pounding when I thought about things I've seen on social media.	.829			.688	2.20	1.07
3. It seemed as if I was reliving the trauma(s) experienced by people I've seen on social media.	.748			.559	2.08	1.06
6. Reminders of things I've seen on social media.	.821			.673	2.60	1.05
10. I thought about upsetting things I've seen on social media when I didn't intend to.	.836			.699	2.48	1.19
13. I had disturbing dreams about things I've seen on social media.	.650			.422	1.69	.98
1. I felt emotionally numb after using social media.		.582		.338	2.20	.95
5. I felt discouraged about the future.		.639		.409	2.88	1.16
6. Reminders of things I've seen on social media upset me.		.488		.238	2.34	1.17
9. I was less active than usual.		.611		.373	2.53	1.19
12. I avoided people, places, or things that reminded me of upsetting things I've seen on social media.		.710		.504	2.03	1.15
14. I wanted to avoid social media.		.520		.270	2.75	1.25
17. I noticed gaps in my memory about social media.		.690		.475	1.82	1.12
4. I had trouble sleeping.			.617	.381	2.55	1.25
8. I felt jumpy.			.518	.269	1.81	.96
11. I had trouble concentrating.			.764	.584	2.90	1.93
15. I was easily annoyed.			.693	.480	2.92	1.16
16. I expected something bad to happen.			.683	.467	2.12	1.14

Table A5.

STSS-SM Inter-Item Correlations

Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. I felt emotionally numb after using social media.	1																
2. My heart started pounding when I thought about things I've seen on social media.	.405**	1															
3. It seemed as if I was reliving the trauma(s) experienced by people I've seen on social media.	.392**	.653**	1														
4. I had trouble sleeping.	.318**	.438**	.394**	1													
5. I felt discouraged about the future.	.404**	.543**	.484**	.337**	1												
6. Reminders of things I've seen on social media upset me.	.402**	.689**	.595**	.357**	.625**	1											
7. I had little interest in being around others.	.327**	.206*	.254**	.368**	.279**	.297**	1										
8. I felt jumpy.	.271**	.362**	.315**	.383**	.343**	.355**	.287**	1									
9. I was less active than usual.	.463**	.349**	316**	331**	292**	.381**	.473**	.314**	1								
10. I thought about upsetting things I've seen on social media when I didn't intend to.	.463**	.682**	.614**	.450**	.504**	.703**	.252**	.390**	.392**	1							
11. I had trouble concentrating.	.429**	.494**	.412**	.502**	.442**	.467**	.387**	.400**	.601**	.516**	1						
12. I avoided people, places, or things that reminded me of upsetting things I've seen on social media.	.359**	.555**	.581**	.483**	.382**	.584**	.370**	.348**	.360**	.569**	.492**	1					
13. I had disturbing dreams about things I've seen on social media.	.271**	.572**	.473**	.370**	.360**	.470**	.264**	.398**	.347**	.542**	.413**	.513**	1				
14. I wanted to avoid social media.	.337**	.366*	.304**	.263**	.312**	.446**	.278**	.188*	.382**	.339**	.407**	.352**	.290**	1			
15. I was easily annoyed.	.395**	.378**	.333**	.402**	.465**	.522**	.314**	.280**	.417**	.493**	.579**	.374**	.346**	.472**	1		
16. I expected something bad to happen.	.476**	.450**	.443**	.343**	.489**	.512**	.332**	.404**	.383**	.622**	.410**	.441**	.461**	.292**	.590**	1	
17. I noticed gaps in my memory about social media.	.301**	.495**	.504**	.476**	.365**	.437**	.378**	.319**	.472**	.478**	.568**	.608**	.471**	.333**	.386**	.440**	1

*. Correlation is significant at the 0.05 level (2-tailed)
**. Correlation is significant at the 0.01 level (2-tailed)
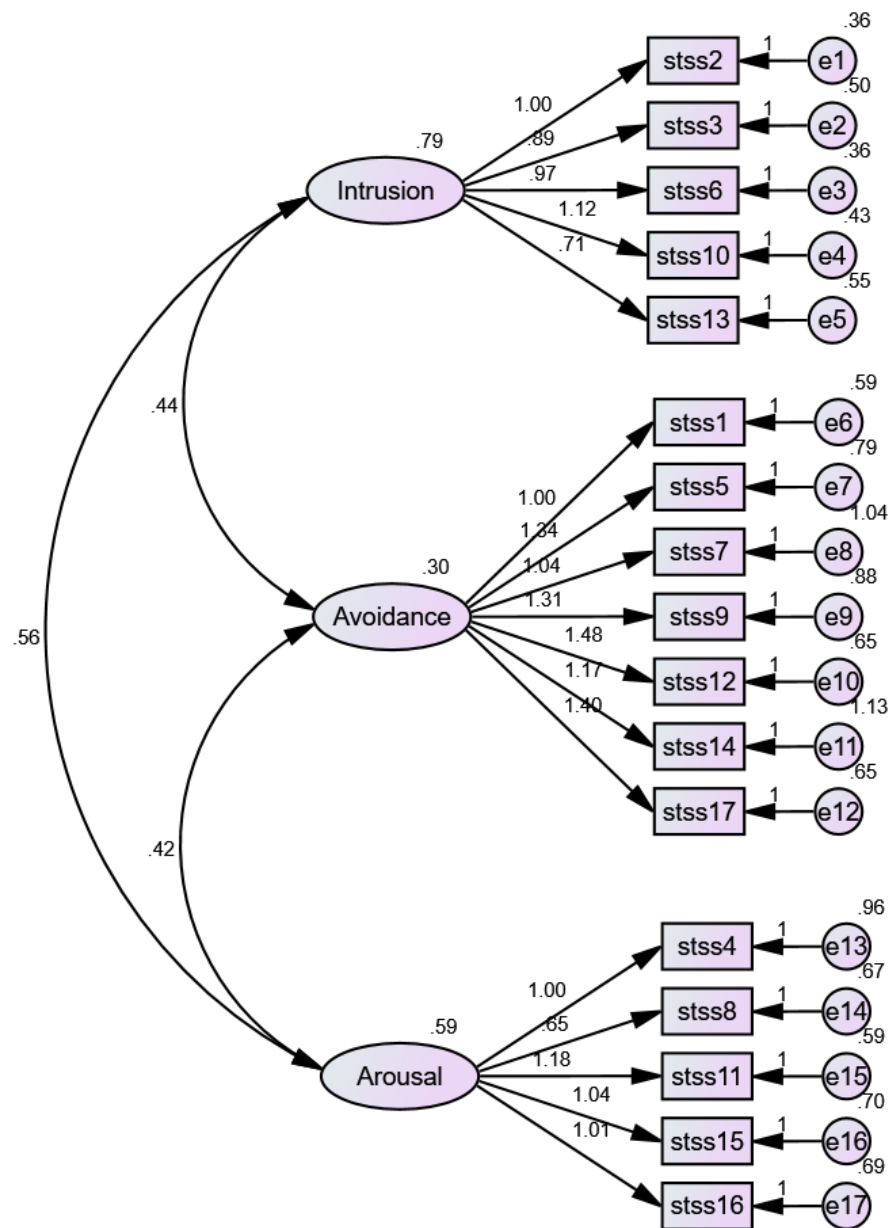
Table A6.

Convergent and Discriminant Validity

	Intrusion Subscale	Avoidance Subscale	Arousal Subscale	Total STSS-SM
Convergent				
Depression	.453**	.421**	.412**	.633**
Trauma	-.065	-.141	-.086	-.175*
Trauma Impact	.176*	.200*	.191*	.325**
Time on Social Media	.153	.135	.166*	.153
Discriminant				
Gender	.111	.058	.092	.126
Age	.040	.027	-.011	-.002

**. Correlation is significant at the 0.01 level (2-tailed)
*. Correlation is significant at the 0.05 level (2-tailed)

Figure 1. *Three Factor Model of STSS-SM*

APPENDIX C.

Secondary Traumatic Stress Scale for Social Media Users

The following is a list of statements made by persons who have been impacted by their experiences <u>on social media</u> with traumatized individuals or traumatic experiences. Read each statement, then indicate how frequently the statement was true for you in the <u>past seven days</u> by circling the corresponding number next to the statement.

(1 = Never, 2 = Rarely, 3 = Occasionally, 4 = Often, 5 = Very Often)

1. I felt emotionally numb **after using social media**.
2. My heart started pounding when I thought about **things I've seen on social media**.
3. It seemed as if I was reliving the trauma(s) experienced by people I've **seen on social media**.
4. I had trouble sleeping.
5. I felt discouraged about the future.
6. Reminders of **things I've seen on social media** upset me.
7. I had little interest in being around others.
8. I felt jumpy.
9. I was less active than usual.
10. I thought about **upsetting things I've seen on social media** when I didn't intend to.
11. I had trouble concentrating.
12. I avoided people, places, or things that reminded me of **upsetting things I've seen on social media**.
13. I had disturbing dreams about **things I've seen on social media**.
14. I wanted to avoid **social media**.
15. I was easily annoyed.
16. I expected something bad to happen.
17. I noticed gaps in my memory about **social media**.

Center for Epidemiologic Studies Depression Scale (CES-D)
Radloff (1977)

Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during <u>the past week</u>.

Rarely or None of the Time (less than 1 day)
Some or Little of the Time (1-2 days)
Occasionally or Moderate Amount of Time (3-4 days)
Most or All of the Time (5-7 days).

<u>During the past week:</u>

1. I was bothered by things that usually don't bother me.

2. I did not feel like eating; my appetite was poor.

3. I felt that I could not shake off the blues even with help from my family or friends.

4. I felt that I was just as good as other people.

5. I had trouble keeping my mind on what I was doing.

6. I felt depressed.

7. I felt that everything I did was an effort.

8. I felt hopeful about the future.

9. I thought my life had been a failure.

10. I felt fearful.

11. My sleep was restless.

12. I was happy.

13. I talked less than usual.

14. I felt lonely.

15. People were unfriendly.

16. I enjoyed life.

17. I had crying spells.

18. I felt sad.

19. I felt that people dislike me.

20. I could not get "going."

APPENDIX E.

Demographic Survey

Please answer each question as it best describes your current life.

1. Gender
   ____ Male
   ____ Female

2. Age   ____

3. Ethnicity
   ____ African American
   ____ Asian
   ____ Caucasian
   ____ Hispanic/Latino
   If Other, please specify _____

4. Highest level of education completed
   ____ High school diploma/GED
   ____ College Freshman
   ____ College Sophomore
   ____ College Junior
   ____ Bachelor's/Associate's Degree
   ____ Master's/Professional/Doctorate Degree

5. On average, how much time do you spend on social media a day?

less than 1 hour   3-4 hours   more than 8 hours

6. Have you ever experienced anything that was very scary, dangerous, or even violent, where someone was hurt very badly or killed, or could have been?
   ____ Yes
   ____ No

7. If yes, how much has this experience impacted you and your ability to sleep or talk to others … with 5 being it has impacted you a lot and 1 being it has not impacted you at all?

   1   2   3   4   5