TRAUMA-INFORMED MESSAGE EFFECTIVENESS IN DOMESTIC VIOLENCE INTERVENTION: THE MODERATING ROLES OF TRAUMA-DRIVEN TRAITS AND DUAL INFORMATION PROCESSING PATTERNS

by

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A DISSERTATION

Presented to School of Journalism and Communication
And the Division of Graduate Studies of the University of Oregon
in partial fulfillment of the requirements
for the degree of
Doctor of Philosophy

September 2021

DISSERTATION APPROVAL PAGE

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Title: Trauma-Informed Message Effectiveness in Domestic Violence Intervention: The Moderating Roles of Trauma-Driven Traits and Dual Information Processing Patterns

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DISSERTATION ABSTRACT

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Doctor of Philosophy

School of Journalism and Communication

September 2021

Title: Trauma-Informed Message Effectiveness in Domestic Violence Intervention: The Moderating Roles of Trauma-Driven Traits and Dual Information Processing Patterns

Research background: Adverse childhood experiences (ACE) predict leading causes of death, yet childhood-trauma informed interventions at the mass level are sparse. This study transformed clinical trauma-informed practices to a larger scale intervention as trauma-informed messages (TIM). Domestic violence victimization among women was selected as the intervention topic due to its high prevalence and correlations with ACE. Childhood trauma-driven traits, such as anxious and avoidant attachments towards parental figures and symptoms of borderline personality disorder (BPD), were tested as moderators. A core feature of those traits is social-communicative inflexibilities, potentially impacting intervention message processing. Cognitive Experiential Self-Theory posited comorbidity between ACE and distorted information processing frameworks. Cognitive and experiential processing styles were tested as the second moderators.

Method: Participants are battered women with ACE, heterosexual, aged 18-60 years old. Amazon Mechanical Turk was utilized for participant recruitment with four prescreening criteria: a) indicating at least one aspect of fear towards their current partner, b) reporting at least one ACE area, c) not having been in women shelters in the past six

months, and d) not a psychiatric patient. Out of 3976 women who participated in the prescreening, only 344 met the criteria.

Data analysis: Data screening yielded 289 cases from 344 for the final analyses. Linear regression models were conducted for two-ways interactions (i.e., message conditions x trauma driven traits) and three-ways interaction (i.e., message conditions x trauma driven traits x information processing patterns). Johnson-Neyman techniques were employed to detect significant interaction regions.

Results: Relative to conventional messages, TIM predicted greater DV termination attitudes, including leaving intention, trauma knowledge, and safety-related empowerment aspects (i.e., perceived internal tools, perceived social support, and perceived tradeoffs from ending the relationship) with small to large effect sizes. The effectiveness persisted even among women with BPD symptoms and unhealthy attachment patterns, who naturally expressed impaired social information processing. TIM effectiveness, however, is less pronounced among women who scored higher on the trauma-driven traits. Considering information processing styles as a second moderator, TIM effectiveness existed among avoidant, cognitive women and anxious, experiential women with the larger effect sizes in the latter group. Implications and limitations are discussed.

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ACKNOWLEDGEMENTS

I would like to thank my advisor, Dr. Autumn Shafer. The amount of time you spent giving me guidance on research, coursework, and career opportunities is appreciated and valued. I also would like to thank Dr. Seth Lewis, who has been selflessly providing academic support and career advice throughout my Ph.D. journey. I greatly appreciate committee members, including Dr. Donna Z. Davis, Dr. David Markowitz, and Dr. John R. Seeley, for their time and dedication during my comprehensive exam and dissertation completion. Several faculty members in the School of Journalism and Communication, such as Dr. Gabriela Martinez, Dr. Christopher Chavez, Dr. Ellen Peters, and several not mentioned, are greatly appreciated and an essential part of my good memories at the University of Oregon. I also would like to thank faculty members from the College of Education, such as Dr. Roland H. Good III, Dr. David DeGarmo, Dr. Keith Zvoch, and Dr. Elizabeth Budd, for helping me to advance my statistical analyses, research methods skills, and implementation science.

Additionally, I would like to thank Ping, my best friend, for being with me in every moment of my life and loving me as one of your family members. I could not have completed this without your love and care that I will always appreciate. Lastly, thanks to my SOJC friends for your encouragement and for being there for me through the highs and lows of graduate school.

I dedicate this dissertation, my degree, and my academic success to myself, who always works hard and never gives up learning, emotionally growing, and becoming a better version of myself every day.

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CHAPTER I

INTRODUCTION

Adverse childhood experiences (ACE) are a predictor of five of the top ten leading causes of death in the United States and adverse social outcomes, such as substance abuse, cardiovascular diseases, and sexual trafficking involvement (CDC, 2021b). However, childhood trauma-informed interventions at the mass level are sparse. In the United States, about 61% of working adults reported experiencing at least one ACE, and approximately 16% reported all types of ACE, including sexual, verbal, and emotional abuse and being neglected by primary caregivers (CDC, 2021a). Trauma-informed interventions in clinics exist in response to the high prevalence of ACE (Catherine & Clark, 2017; Fallot & Harris, 2008). However, those interventions may not be accessible among marginalized individuals without health insurance or unawareness of ACE's impacts on their lives. A significant outcome of ACE is domestic violence (DV) victimization, especially among women (Li, Zhao, & Yu, 2019). According to a national survey (D'Inverno, Smith, Zhang, & Chen, 2019), 33% of American women have experienced sexual abuse, 23% experienced severe physical violence, and 47% reported psychological abuse by their intimate partner. The homicide rate of DV female survivors is 17 times higher than women without the experience (CDC, 2020a).

Despite the strong correlations between ACE and females' DV victimization, an accessible childhood trauma-informed DV intervention is rare. A few DV interventions in clinics and women's shelters are trauma-informed and suggested positive outcomes associated with DV termination relative to conventional DV interventions (Miller et al., 2011; Sullivan, Goodman, Virden, Strom & Ramirez, 2018). The intervention

effectiveness also persisted over time with medium effect sizes (Sullivan et al., 2018). Nonetheless, battered women without financial stabilities or awareness of ACE as a potential root of their DV involvement may not seek a trauma-informed clinical or shelter intervention. Some women may be too afraid of their abusive partners to seek professional help. The inaccessibility of trauma-informed interventions among battered women may lead to health disparities and public health costs associated with DV. Approximately $103,767 of the national public health costs per year are for a female DV survivor, and $3.6 trillion is a population economic burden as about 48 million American adults suffered from DV victimization (Peterson et al., 2018). To prevent DV victimization's adverse outcomes and raise awareness regarding childhood trauma as a potential cause, introducing an accessible, trauma-informed DV intervention is vital. The current study designed and tested the effectiveness of trauma-informed messages (TIM), which emphasize empowerment, psychoeducation, and trauma-informed safety plans regarding DV termination, which are fundamental elements of clinical trauma-informed practices (Catherine & Clark, 2017; Grabbe & Miller-Karas, 2017; Fallot & Harris, 2008; Sakvitne et al., 2000).

Individuals with ACE likely develop childhood trauma-driven psychosocial traits, such as borderline personality disorder (BPD) symptoms and unhealthy attachment patterns (i.e., anxious and avoidant) (Dykas & Cassidy, 2011). A core feature of those traits is distorted internal working models, such as negative views towards the self and others and a lack of insights regarding healthy relationship dynamics (Dykas & Cassidy, 2011). Those individuals, therefore, may not effectively respond to conventional intervention messages not designed to match how they view the world. Confirming the

assumption, traditional DV interventions that are not trauma-informed over the past decade revealed medium and non-significant effect sizes (Hackett, McWhirter & Lesher, 2015). Conventional DV interventions likely suggested battered women leave their abusive partners abruptly. Despite safety purposes, those intervention messages may negatively interfere with battered women's dysfunctional attachment schemas associated with the fear of abandonment, which was likely constructed by their primary caregivers' emotional and physical instabilities (Dykas & Cassidy, 2011). Trauma-informed messages emphasize psychoeducation regarding the effects of childhood trauma on romantic relationship difficulties, empowerment of ways to overcome trauma, and a doable safety plan may be more effective than conventional messages. To test the hypothesis, the current study examines the moderating roles of BPD traits and insecure attachment patterns in trauma-informed message effectiveness. To which levels of those trauma-driven psychosocial traits that TIM is still effective will also be assessed.

In addition to trauma-driven traits, information processing tendencies might influence TIM effectiveness among battered women. The Cognitive Experiential Self-Theory (Epstein, 2012) as a personality and dual information processing model suggested experiential and cognitive information processing patterns, which are constructed over life experiences and may differ across individuals. The cognitive system is slow, conscious, cognitive abilities related, and logical, whereas the experiential system is fast, preconscious, emotional, and might not be logical. Humans tend to utilize the experiential system for daily task functioning as a cognitive shortcut and use the cognitive system to solve more complex problems (Epstein, 2012). Nonetheless, in the context of intimacy-related information, dominant information processing tendencies may differ across

attachment patterns (i.e., anxious and avoidant) and upbringing-induce psychopathological traits, such as BPD symptoms (Dykas & Cassidy, 2011). Individuals with avoidant attachment patterns tend to express inhibitory control or shift attention away from intimacy-related information if the information reminds them of early-life painful memories (Dykas & Cassidy, 2011). Greater inhibitory control and attentional biases among avoidant individuals relative to healthy people when processing intimacy-related information indicated their tendencies to utilize the cognitive information processing system to avoid psychological pain. On the other hand, people with anxious attachments or BPD traits likely showed attentional biases towards emotional cues, primarily if those cues signify abandonment and social rejections from their attachment figures (Dykas & Cassidy, 2011). The patterns indicated experiential information processing tendencies among anxious women or those with BPD traits.

Overall, literature suggested that attachment-related information processing among individuals with ACE may differ across trauma-driven traits, such as BPD symptoms and insecure attachment patterns, and information processing tendencies, such as cognitive and experiential. Therefore, the effectiveness of trauma-informed domestic violence messages, which discuss primary caregivers and romantic partners as attachment figures, may vary across trauma-driven traits, information processing patterns, and the interaction between those factors. To transform clinical trauma-informed practices to a larger scale intervention and identify risk and protective factors of intervention message processing, the current study designed and tested TIM effectiveness, the two-way interactions between TIM and trauma driven traits, and the three-ways interactions between TIM, trauma driven traits, and information processing styles. Potential

implications include TIM as an accessible intervention to raise awareness regarding childhood trauma impacts on adulthood romantic relationships. The introduction of intervention messages that battered women with ACE could effectively process could decrease health disparities and DV-related problems as a public health crisis.

CHAPTER II

LITERATURE REVIEW

Intimate Abusive Relationships

Definitions and Prevalence

Domestic violence (DV) is a global health issue across socioeconomic and cultural groups (CDC, 2020; World Health Organization: WHO, 2012). DV is commonly defined as physical, sexual, or psychological harm by a current or former partner or spouse, which can occur among heterosexual or homosexual couples (CDC, 2020). The perpetrators are predominantly male, whereas the victims tend to be females (WHO, 2012). DV impacts approximately more than one-third of women in the United States (CDC, 2020). Throughout the lifetime, an estimate of one-fourth of women and one-ninth of men aged older than 18 years old have been abused at least once by their intimate partner (Huecker et al., 2021). Approximately 33% of women experienced sexual abuse from their intimate partners (D'Inverno et al., 2019). About 23% experienced severe physical violence (e.g., being beaten, choked, or burned on purpose), and 47% reported psychological abuse experiences (e.g., humiliating and controlling manners) (D'Inverno et al., 2019). More than 70% of women who have experienced DV reported being stalked or harassed by their abusers after the relationship termination (D'Inverno et al., 2019). The homicide rate of DV female victims is 17 times higher than women without such experience (CDC, 2020). Most female survivors have experienced an abusive relationship for the first time before their 25 years old (D'Inverno et al., 2019).

The dynamic of DV includes a) idealization (i.e., the period when abusers idealize and treat victims in a loving and caring manners), b) devaluation (i.e., the stage when the

caring and loving behaviors start to fade away and abusive behaviors manifest), c) discard (i.e., the phase where victims are abandoned and go through punishment from abusers, such as a silent treatment or physical aggression) and d) reconciliation (i.e., the stage when victims may or may not try to leave the relationship and abusers come back for reharmonization) (Maselesele, 2011). The four stages may repeat in cycles, resulting in multiple episodes of abuse and victims' attempts to leave the situation before the actual termination of the relationship (Maselesele, 2011). A DV common outcome is post-traumatic stress disorder (PTSD) symptoms, which were found from 31% to 84.5% among DV survivors (Iverson et al., 2013) and depression (Loving & Sbarra, 2015). Both PTSD and depression may persist for years even after the relationship ends (Loving & Sbarra, 2015). Depression from DV is also found to predict revictimization due to reduced cognitive ability to detect potential abusers, feelings of guilt, worthlessness, and helplessness (Cougle, Resnick, & Kilpatrick, 2009).

Childhood Trauma and DV Victimization

Research has shown a strong correlation between childhood trauma and DV victimization (Cougle et al., 2009; Iverson et al., 2013). Bowlby (1979) proposed that infants seek comfort and emotional connections from their primary caregivers, especially when they perceive threats in the environment. Infants whose caregivers do not provide enough emotional support tend to develop impaired internal working models about the self and others, resulting in insecure attachment patterns (Bowlby, 1979). Hazan and Shaver (1987) extended Bowlby's concept and suggested the influences of childhood attachment styles on romantic relationships in adulthood. Women with abusive childhood likely report insecure attachment patterns, greater fear, and tendencies to view themselves

as unworthy of love or support in a romantic relationship (Follete & Vechiu, 2017). Those cognitive patterns thus lead to DV victimization (Follete & Vechiu, 2017).

Ainsworth and colleagues (1978) discussed three attachment styles: anxious, avoidant, and secure; all are shaped by the quality of early relationships between individuals and their primary caregivers. Anxious attachment is influenced by caregivers with emotional instabilities (Ainsworth et al., 1978). People with an anxious attachment style tend to cling to their romantic partners to fulfill their psychological needs and feel threatened when they experience real or perceived abandonment by their partner (Ainsworth et al., 1978; Loving & Sbarra, 2015). Anxious individuals may hold on to an intimate relationship although the relationship is abusive and no longer fulfills their emotional needs (Ainsworth et al., 1978; Loving & Sbarra, 2015).

Avoidant attachment is also impacted by caregivers who are not stable in physical presentations and emotional comfort towards their children (Ainsworth et al., 1978). In contrast to anxious individuals, avoidant people rarely rely on their partner and feel threatened when their sense of independence is compromised due to their partner's emotional needs (Ainsworth et al., 1978). Avoidant individuals likely report distrust in their romantic partners and prefer to fulfill their own emotional needs by themselves (Loving & Sbarra, 2015). Cognitive ability tasks have shown that avoidant individuals have inhibitory control to negative emotional cues (e.g., sad faces) relative to participants with healthy attachments (Dewitte & De Houwer, 2010). Avoidant individuals avoid comforting distressed partners and may become an abuser in a romantic relationship (Loving & Sbarra, 2015).

Nonetheless, the inhibitory control ability may decrease when avoidant individuals experience cognitive depletion (Dewitte & De Houwer, 2010). Studies reported severe depressive symptoms among avoidant individuals after a long-term relationship ended because they do not have enough cognitive ability to avoid overwhelming distress and negative emotions (Loving & Sbarra, 2015). Among anxious individuals, the relationship between inhibitory control and their response towards negative cues is not significant (Edelstein & Gillath, 2007). However, anxious individuals tend to show more significant selection bias towards cues associated with their figures of attachment relative to people with healthy attachment (Dewitte, De Houwer, Koster, & Buysse, 2007). Anxious people, therefore, are prone to experience severe depression when they are rejected by their romantic partner and may have irrational attempts to reconcile with their partner after the relationship ended (Loving & Sbarra, 2015). In addition to attachment styles, psychological constructs associated with childhood trauma, such as borderline personality disorder (BPD) traits, may predict the likelihood of DV victimization (Rodriguez-Srednicki & Twaiter, 2006), which will be discussed later in another part of the dissertation. A lack of emotional support or experiencing the emotional withdrawal of a male attachment figure during childhood also increases the risk of DV victimization among women (Rodriguez-Srednicki & Twaiter, 2006).

Trauma-Informed Care

Definition of Trauma and Trauma Effects

According to DSM-5, trauma is defined as an experience that creates the feeling of helplessness, fear, and horror and impacts individuals' cognitive, emotional, and behavioral components (American Psychiatric Association: APA, 2013). After a

traumatic situation ends, individuals may change their beliefs about the world and themselves (APA, 2013). To define which situation is trauma depends on one's perceptions of the situation and clinical practitioners' judgment (Dalenberg & Briere, 2017). Some events, such as rape, are universally justified as traumatic events because they likely result in detrimental effects on victims in several aspects (Dalenberg et al., 2017). In the United States, approximately 55-80% of people reported experiencing at least one traumatic experience throughout their lifetime (Kilpatrick, Badour, & Resnick, 2017). Compared to their male and older counterparts, women and adolescents experience more traumatic events and negative consequences (Kilpatrick et al., 2017).

One of the prevalent forms of trauma is childhood trauma (Catherine & Clark, 2017). Childhood trauma refers to abusive relationships between children and their caregivers that can be categorized into emotional abuse, psychical abuse, sexual abuse, and neglect (CDC, 2021b). In the United States, approximately 70% of non-clinical populations reported childhood traumatic experiences, whereas clinical patients' prevalence is up to 90% (Catherine & Clark, 2017). The Adverse Childhood Experiences Study (ACEs) revealed strong relationships between childhood trauma and mental health, substance use, behavioral and social difficulties (CDC, 2021a). The ACE study with 17,000 working adults in the United States addressed that more than 10% of participants reported witnessing domestic violence, 20% had been molested, 30% had been physically abused by the age of 18, and about 64% reported having at least one type of ACE (CDC, 2021a). Women tend to twice to eight times higher experience childhood sexual abuse than men (CDC, 2021a). The mean prevalence rate of childhood sexual abuse is 8% for

men and 20% for women (Pereda, Guilera, Forns, & Gomez-Benito, 2009; Follete & Vechiu, 2017).

Among individuals who have had three or more ACE events, 25.5% severely experienced mental health issues and physical problems such as cancer, heart disease, addiction, and earlier death (CDC, 2021b). The relationship between ACE and adverse outcomes in adulthood is positively correlated, meaning that the more negative childhood experiences one has, the more negative health outcomes they are likely to suffer (CDC, 2021b). Relative to other types of trauma (e.g., being in a war or experiencing a natural disaster), childhood trauma provides adverse psychological and emotional outcomes (Oral et al., 2015). Childhood trauma survivors are 5,000 percent more likely to commit suicide, become drug abusers, and develop eating disorders (CDC, 2021b). A child who experiences abuse tries to make sense of the abusive situation and may come up with one of the two psychological concepts: a) they are innately not good such that they deserve the abuse by their caregivers and b) the child psychologically dissociates themselves from the situation to avoid painful feelings (Follete & Vechiu, 2017). Experiencing childhood trauma can make a child feel helpless from not escaping from the situation, developing maladaptive coping mechanisms, such as self-blaming (Follete & Vechiu, 2017), and adverse health outcomes in adulthood.

A longitudinal national survey with Americans from teenage to young adulthood revealed that 36% of childhood sexual abuse survivors met depression criteria, whereas 20% of participants in the control group did (Musliner & Singer, 2014). The relationship between childhood sexual abuse and depression in adulthood is pronounced in women (odds ratio 1.68) more than men (odds ratio 1.25) (Musliner & Singer, 2014). In addition

to depression, childhood trauma may lead to the development of complex PTSD (cPSTD). Symptoms include alterations in self-perception, attention, consciousness, affective arousal, perceptions of abusers, somatization, and the system of life meaning (Follette & Vechiu, 2017). People suffering from cPTSD likely experience the feeling of low self-love, difficulties in maintaining interpersonal relationships, and impaired emotional and cognitive regulations (Follette & Vechiu, 2017).

Outside of the mentioned adverse outcomes, extensive research documented the relationship between childhood trauma and adults' engagement in DV (Follette & Vechiu, 2017; Loving & Sbarra, 2015; Pietromonaco & Beck, 2015). Relative to females without childhood trauma, those with a history of childhood sexual abuse are two times more likely to experience DV in adulthood (Follette & Vechiu, 2017). Females with physical and sexual abuse history are three times more likely to experience sexual and physical abuse during adulthood (Desai, Arias, Thompson, & Basile, 2002). The relationship between childhood trauma and adulthood DV victimization occurs via unhealthy attachments and borderline personality disorder (BPD) traits (Dykas & Cassidi, 2011). Those psychosocial traits are comorbid factors of childhood trauma found, which predict DV victimization involvement with medium to large effect sizes (Follette & Vechiu, 2017; Pietromonaco & Beck, 2015; Rodriguez-Srednicki & Twaite, 2006; Loving & Sbarra, 2015). The roles of BPD and attachment patterns in relevance to DV are explained later on Page 41.

Trauma-Informed Care

In response to the high prevalence of childhood trauma in the United States, trauma-informed care (TIC) was developed and initially promoted in the healthcare

industry (Catherine & Clark, 2017). TIC refers to a practice, not psychotherapy, positing that every patient has likely experienced at least a traumatic event in their early life and therefore should be treated with care and empathy (Oral et al., 2015). TIC is a promising model for an organizational shift in health, health psychology, and behavioral health, focusing on raising awareness among healthcare professionals regarding the impacts of trauma on one's life (Substance Abuse and Mental Health Services Administration; SAMHSA, 2014).

According to Trauma Theory, unprocessed traumatic memories can be triggered by relevant arousal or situations (Reeves, 2015). In a healthcare setting where the power imbalance between healthcare providers and patients naturally exists (Catherine & Clark, 2017), trauma triggering should be concerning. For instance, intimate healthcare procedures, such as blood pressure cuff that causes tightness and breast cancer screening, may trigger sexual abuse memories among sexual abuse survivors (Harris & Fallot, 2001). Triggered traumatic memories may lead to patients' withdrawal from treatment, aggressive behaviors towards medical providers as a self-defense mechanism, and miscommunication between medical providers and patients (Harris & Fallot, 2001). An example of TIC practice among healthcare providers is asking a patient "what happened to you" instead of "what is wrong with you" when providers encounter patients' negative attitudes or behaviors (SAMHSA, 2014). Although TIC is initially applied in the healthcare industry, recent movements have promoted the practice across education and law enforcement (Catherine & Clark, 2017).

TIC principles were mentioned the first time by Judith Herman in 1992 (Catherine & Clark, 2017). Although Herman did not mention the term TIC, she discussed

empowerment as an essential concept of trauma recovery. Herman (1992) stated that traumatized individuals tend to experience a power imbalance between them and their abusers and, therefore, gradually lost the sense of authority and self-love. Promoting empowerment in clinical practices may help individuals with trauma heal and gain a sense of self back (Hodas, 2007; Kimberg & Wheeler. 2019). TIC is different from traditional healthcare in several aspects (Hodas, 2007; Kimberg & Wheeler. 2019). One behavior considered 'psychopathological' in traditional healthcare may be considered 'a coping mechanism' for TIC (Catherine & Clark, 2017). For example, a traditional healthcare practice may consider drug abuse impairment of executive functions, especially inhibitory and rewarding systems (Catherine & Clark, 2017). On the other hand, TIC practitioners may view drug abuse as a coping mechanism from growing up in an abusive environment (Catherine & Clark, 2017). Thus, treatment approaches for TIC may include discussing the relationship between the patient and their parents, parents' drug abuse history, and the patient's emotional coping mechanisms when experiencing stress (Catherine & Clark, 2017).

Based on Herman's empowerment concept, clinical research has suggested trauma-informed interventions with different key practices in each model (Catherine & Clark, 2017; SAMSHA, 2014; Saakvitne et al., 2000). Nonetheless, three elements are shared across TIC interventions, including a) psychoeducation regarding the impacts of childhood trauma on one's cognitions, emotions, and behaviors, b) empowerment of ways to overcome trauma, and c) doable steps of the healing process and understanding that the process can take time. In 2000, Saakvitne and colleagues suggested the RICH model, which refers to 'respect,' 'information,' 'connection,' and 'hopes.' For a

healthcare practice, showing ‘respect’ especially for people with trauma experiences can provide a sense of collaboration instead of a sense of hierarchy. Providing patients with trauma-related ‘information,’ such as trauma causes, ways to avoid trauma triggers, reactions towards trauma, and methods to control them, can increase self-efficacy and promote trauma recovery (Sakvitne et al., 2000). ‘Connecting’ with patients by validating their feelings when sharing their stories is vital (Sakvitne et al., 2000). People with traumatic experiences tend to be invalidated by their caregivers during childhood, which makes them uncomfortable sharing their feelings with others, including healthcare professionals (Oral et al., 2015). Providing patients ‘hope’ by telling them that trauma can be healed and living a stable life is possible is necessary (Sakvitne et al., 2000). The RICH models were expected to provide better treatment outcomes, less termination of treatment before the appropriate time, and patients’ satisfaction towards the treatment (Sakvitne et al., 2000).

In 2008, Fallot and Harris proposed the Five Principles for TIC, including ‘safety,’ ‘empowerment,’ ‘trustworthiness,’ ‘choices,’ and ‘collaboration.’ ‘Safety’ could be categorized into external and internal aspects and should be established during an interaction with traumatized individuals, who likely lack a sense of safety due to harm caused by their primary caregivers. For instance, in a clinical setting, external safety can be formed by asking patients ways to make the therapeutic environment comfortable and safe. Internal safety can be established by encouraging patients to speak up if they feel emotionally threatened during the treatment process. ‘Empowerment’ supports patients throughout the treatment process and encourages them to reprocess their trauma from a different light. ‘Trustworthiness’ can be created by setting the tone and boundaries since

the initial meeting between a TIC provider and traumatized individuals. Predictability, stability, and consistency will also increase traumatized individuals' trust towards a healthcare provider. Providing treatment choices and a sense of collaboration may enable traumatized individuals to feel empowered and equal with healthcare practitioners.

Trauma-Informed Approaches

Research mentioned two TIC approaches, including the top-down (Sigel et al., 2013) and the bottom-up (Grabbe & Miller-Karas, 2017). The top-down approach is conventional and often referred to as cognitive-behavioral therapy, whereas the bottom-up approach is a newer evidence-based practice and emphasizes different types of somatic education and therapies (Alisha, 2018; Moreland-Capua. 2019). The top-down approach focuses on altering an individual's thinking process to improve their emotions and behaviors and decrease the somatic symptoms caused by trauma (Iverson et al., 2011; Moreland-Capuia, 2009). A well-applied top-down cognitive-behavioral therapy approach is cognitive processing therapy (Iverson et al., 2011). Cognitive processing therapy includes education about PTSD, identifying relationships between traumatic events, cognitions, and emotions, and developing more balanced thinking (Iverson et al., 2011). Individuals are instructed to identify cognitive distortion in their everyday life to develop awareness and correct those thoughts (Iverson et al., 2011). Nonetheless, research argued that cognitive-behavioral TIC should not be used in people with current self-harm or suicidal behaviors, those who lack social support during trauma processing, and are at risk of further trauma exposure (e.g., currently involving abusive relationships) (Hodgdon et al., 2013). Those vulnerable populations may have limited cognitive ability to comprehend and adhere to the intervention (Hodgdon et al., 2013). Top-down trauma-

informed interventions must be delivered by licensed therapists, limiting access among individuals who cannot afford a therapeutic session (Hodgdon et al., 2013).

Like the top-down intervention, the bottom-up approach emphasizes trauma education, such as teaching individuals the effects of trauma on the body and ways to unwire them (Haase et al., 2015; Haase et al., 2016). Research showed that exposure to trauma might severely alter the physiology and anatomy of the brain, resulting in the impairment of neuron connections, attitudinal and behavioral dysfunctions, and mental disorders (Groger et al., 2016). Fortunately, the negative changes of the brain are preventable and reversible if individuals understand the effects of trauma on their body and practice somatic therapies to improve their physical sensation and brain functioning (Szyf, Tang, Hill, & Musci, 2016). Like the top-down approach, bottom-up trauma-informed interventions address trauma education to facilitate traumatized individuals in consciously shifting unpleasant to pleasant physical sensations (Grabbe & Miller-Karas, 2017). Since trauma is related to physiological changes, teaching trauma survivors about physical symptoms of trauma responses may improve their emotional regulation and mental conditions (van der Kolk, 2014) and enable them to regain the sense of self and body awareness (Grabbe & Miller-Karas, 2017).

The TIC bottom-up approach posits intervention advantages. First, as emotional regulation disability due to chronic trauma is similarly registered in human bodies regardless of sociocultural influences, the bottom-up approach is likely promising even considering sociocultural differences (Nummenmaa, Glerean, Hari, & Hietanen, 2014). Second, the bottom-up approach is not necessarily delivered by a licensed mental health professional (Grabbe & Miller-Karas, 2017). Research revealed the bottom-up

approach's effectiveness even among individuals with cPTSD (van der Kolk, 2014). Although individuals may benefit from the top-down approach, the accumulation of traumatic events may profoundly impact the nervous system. Understanding what happened to one's body during and after trauma and ways to deal with them may be helpful (Grabbe & Miller-Karas, 2017).

An example of the bottom-up approach is the Trauma Resiliency Model, which aims to educate recipients about trauma nature, types of emotional, cognitive, behavioral, spiritual, and physical reactions to trauma, the nervous system in responses to threat and fear, and emotional management skills (Grabbe & Miller-Karas, 2017). The model predicted decreases in depression, hostility, anxiety, and somatic symptoms (Citron, Miller-Karas, 2013) even among individuals with severe adverse childhood experiences (Grabbe & Miller-Karas, 2017). More than 95% of participants reported using self-regulation skills to manage daily stress (Citron, Miller-Karas, 2013). The psychoeducation aspect of the intervention does not require a mental health professional to deliver, and thus has been applied on media platforms (e.g., cell-phone applications) to increase the intervention accessibility (Grabbe & Miller-Karas, 2017). Although some components of the model, such as trauma-processing psychotherapy and the completion of survival mode, require a licensed therapist's delivery, the psychoeducation aspect is considered a standalone set of skills, which is safe and affordable for traumatized individuals regardless of their socioeconomic, emotional, and educational background (Grabbe & Miller-Karas, 2017).

In conclusion, both top-down and bottom-up trauma-informed approaches emphasize three vital elements: a) psycho-educating the impacts of early-life trauma on

one's cognitions, emotions, body, and behaviors, b) empowering trauma survivors regarding their healing journey, and c) providing empathetic statements that trauma healing could take time and is possible. Although some practices of both bottom-up and top-down approaches require mental health professionals' delivery, the mentioned three foundations can be a standalone intervention and, therefore, could be a foundation of trauma-informed messages designs.

Trauma-Informed Domestic Violence (TI-DV) Interventions

TI-DV Principles

Studies revealed childhood trauma as the strongest predictor of DV victimization even when sociocultural factors are considered (Dalenberg, Straus, & Carlson 2017; Li et al., 2019). However, only a few DV interventions have integrated trauma-informed practices (Wilson et al., 2015; Sullivan et al., 2018). Similar to trauma-informed care in contexts irrelevant to DV, mutual key elements across TI-DV Interventions include a) psychoeducation regarding causes and the impacts of childhood trauma on adulthood relationships and one's cognitions, emotions, behaviors, b) empowerment of ways to overcome trauma, and c) doable steps of the healing process and understanding that the process can take time (Wilson et al., 2015). Individuals with trauma may feel their differences from others but may not understand the impacts of trauma on their attitudes and behaviors (Classen & Clark, 2017). Traumatized individuals likely blame themselves and try to fix any abuse even though they might not be the person who causes the situation (Loving & Sbarra, 2015). This psychological entrapment can keep individuals with childhood trauma in adulthood DV for months, years, or even throughout their lifetime without a proper intervention (Loving & Sbarra, 2015). TIC principles can

facilitate DV victims and potential victims to understand the root of their engagement in an unhealthy intimate adult relationship (Andruczyk, 2015). Creating awareness and knowledge among DV victims regarding the cause of their involvement in an intimate abusive relationship is the first important step for the relationship termination (Andruczyk, 2015).

Only a few DV interventions are trauma-informed and still lack a blueprint of how TIC should be operated for the most effective outcomes (Sullivan et al., 2018). Even beyond that, not every battered woman with childhood trauma has an opportunity to receive a TI-DV intervention due to financial and healthcare limitations. Conventional DV interventions aimed to 'make a change' among battered women by assessing their stage of change towards the end of an abusive relationship (Hegarty et al., 2015). Those interventions applied theories of behavioral changes, such as the Transtheoretical Model with five stages of change (i.e., pre-contemplation, contemplation, determination, action, relapse, and maintenance) (Prochaska & Velicer, 1997). However, clinical evidence showed that telling people 'what to do,' or 'how to do it,' is rarely effective in the context of DV (Hegarty et al., 2015). It is challenging to define what an actual change looks like, estimate the possibility of changes among couples who have been together for months or years, and assess if one embarks on changing (Hegarty et al., 2015).

Instead of determining stages of change that battered women should take to terminate an abusive relationship, TIC promotes education regarding the impacts of early trauma on one's life and empowers women to take steps to understand trauma-related challenges at their own pace (Catherine & Clark, 2017). A qualitative analysis of TI-DV interventions revealed six principles, including 'establishing emotional safety,' 'restoring

choice and control,' 'facilitating connection,' 'supporting coping,' 'responding to identity and context,' and 'building strengths' (Wilson et al., 2015). Although TI-DV interventions posited the mutual six principles, differences exist across intervention levels (i.e., individual healing versus community participation) (Wilson et al., 2015). The inconsistency across TI-DV interventions addresses the lack of an indication of practical intervention elements (Wilson et al., 2015), such as verbal trauma-informed scripts for practitioners or trauma-informed messages to be distributed at a larger scale.

The Substance Mental Health Services Administration (SAMSHA) (2014) suggested eight TIC principles for battered women, including 'safety,' 'trustworthiness and transparency,' 'peer support,' 'collaboration and mutuality,' 'empowerment,' 'voice and choice,' and 'cultural, historical, and gender issues.' SAMHSA (2014) also addressed 4R's, a guideline for TI-DV practitioners, including 'realization of trauma,' 'recognize trauma signs,' 'responds to people's trauma through trauma-informed principles,' and 'resist re-traumatization.' Recruiting DV survivors to distribute TI-DV interventions is promoted because support from ones with direct experience may posit a successful role model and raise self-efficacy in the recovery process of battered women (SAMHSA, 2014).

The Intersectionality Model of TI-DV suggested four principles, including 'power sharing' (i.e., supporting victims in framing their narratives and concerns), 'authenticity' (i.e., promoting effective and safety planning in an enduring and flexible way), 'individualized services,' (i.e., each woman should be considered as a separate individual and thus should receive a personalized plan), and 'system advocacy' (i.e., improving victims' options within their communities such that they can seek social support)

(Kulkarni, 2019). The model showed efficacy and effectiveness even among women hesitant for physical separation from their partners yet still want to attain safety and dignity in life (Kulkarni, 2019).

Empirical Research

Since TI-DV interventions are a new practice relative to conventional DV programs, quantitative empirical studies regarding their efficacy and effectiveness are rare. Research suggested ARCHES (Addressing Reproductive Coercion in Health Settings) based on the correlation between DV victimization and reproductive coercion (Miller et al., 2016). ARCHES is a TI-DV model emphasizing a) universal education and assessment of DV; b) harm reduction counseling to minimize the impacts of DV; and c) supported referrals to victim services (Miller et al., 2016; Miller et al., 2011). A longitudinal study applied ARCHES and randomly assigned battered women to receive the intervention (Miller et al., 2011). At a 4-month follow-up, women in the intervention group terminated their intimate abusive relationship for safety concerns relative to women in the control group and the baseline (Miller et al., 2011). One year later, participants in the intervention group showed significant increases in knowledge about DV resources and self-efficacy to perform harm reduction behaviors (Miller et al., 2011) than control subjects and the baseline.

In Baltimore, a family planning clinic applied one element of ARCHES (i.e., universal education and assessment regarding DV) to 65% of female patients and gathered the data via a survey in the next visit (Miller et al., 2016). The intervention was delivered in two ways: a) a provider-facilitated discussion on DV and b) a palm-sized safety card in a magazine-style with information about DV (e.g., DV impacts and safety

resources). The card title states, “Do You Know Your Relationship Affects Your health?” Participants who received the intervention reported greater knowledge about DV resources regardless of DV history, perceived caring from providers, and confidence in providers’ responses to DV. Participants perceived the education card as a valuable tool as the card provides resources for DV victims. Receiving the card, participants who do not want to discuss their relationship issues with healthcare professionals perceived less critical conversations. A qualitative interview of the study revealed that the content in the card raised participants’ awareness of DV. Nonetheless, some providers reported dissatisfaction towards the card, especially if handling it to patients with extreme DV experiences. Those providers reported feeling afraid that the card may discount patients’ experiences because “DV is a bigger issue that cannot be fixed by one card” (Miller et al., 2016, p. 6).

A study examined the effects of TI-DV on attitudes of battered female residents from fifty-seven shelters in the Northeast of the United States and reported a potential intervention theme for future programs (Sullivan et al., 2018). The emerging themes include a) an understanding of trauma and its effects on health and behaviors, b) physical and psychological safety concerns, c) cultural integration, d) education of the nature and effects of abuse on survivors’ everyday experiences, and e) providing opportunities for survivors to regain control over their lives. The study reported significant correlations between TI-DV exposure and improved self-efficacy, safety-related empowerment, and depressive symptoms over one month.

A mutual key across TI-DV intervention is psychoeducation regarding the impacts of early-life trauma on DV victimization involvement (Miller et al., 2016;

Sullivan et al., 2018). Research suggested that understanding the effects of trauma on women's lives, brain chemistry education, and victims' decision-making may provide promising results for a TI-DV intervention (Goodman et al., 2016; Miller et al., 2016). To facilitate women's decision-making, trauma-informed education should be the first step (Goodman et al., 2016). DV models integrated trauma elements (Goodman et al., 2016). However, those tend to be trauma-specific – requiring licensed therapists and treatments such as cognitive-behavioral therapies, eye-movement desensitization, and reprocessing– more than trauma-informed – not requiring a professional treatment and focusing on safe spaces, empowerment, and education regarding the impacts of early trauma on DV engagement (Goodman et al., 2016).

Motivational Interviewing (MI) has been applied in DV interventions as a closely related concept to TIC (Saftlas et al., 2014). MI is an evidence-based combination of the patient-centered philosophy and coaching strategies (Miller & Rollnick, 2013). The practice enables individuals to strengthen their motivation for changes and respect for choices and changes that they can control (Miller & Rollnick, 2013). Like TIC principles, MI, in the context of DV interventions, encouraged women to set their goals, steps, and priorities more than being told 'what to do' or 'when to leave their abusive partner' (Saftlas et al., 2014). MI and TI-DV interventions enable women to identify feasible goals and small steps to implement to increase their self-efficacy and perceived autonomy over their lives (Saftlas et al., 2014). TI-DV strategies and MI as a relevant concept enable women to feel "accepted" despite "perceived unacceptable behaviors" (Saftlas et al., 2014).

Similar to TIC, MI posited techniques such as the use of open-ended suggestions, an affirmation of strengths, appreciation of battered women's difficulties, and empathetic ways to make changes (Saftlas et al., 2014). A randomized controlled trial reported that battered women in the MI group showed fewer depressive symptoms six months after the intervention than women in the control group (Saftlas et al., 2014). The level of self-efficacy and readiness to terminate DV in the treatment group was also higher than in the control group, although the difference was insignificant. Even though MI relies on reflective listening from a therapist (Saftlas et al., 2014), its principles, such as encouraging battered women to willingly progress at their pace more than telling them to terminate the relationship abruptly, could be applied to create trauma-informed messages outside a clinical interviewing.

An example of intervention messages based on MI and TIC principles is I-DECIDE, an online DV intervention encouraging young, battered women to terminate DV (Tarzia et al., 2016). The intervention is based on the Psychological Readiness Model and proposes that whether women leave DV depends on three factors: awareness, social support, and perceived self-efficacy. Before exposure to the intervention, participants were asked to estimate their level of readiness to leave their abusive partners. Applying MI principles, participants were asked to list the pros and cons of staying with their abuser and a specific action that they may take to feel better about the situation on the intervention website. Research showed the correlations between estimating the advantages versus disadvantages of staying in an abusive relationship and increased self-efficacy and awareness (Benight & Bandur, 2004; Hegarty et al., 2013). I-DECIDE provided illustrative examples about the pros and cons of staying and leaving the

relationship (Tarzia et al., 2016). After finishing the online module, participants were exposed to open-ended DV termination suggestions tailored according to their reported readiness levels initially. Exposure to tailored and open-ended messages allowed participants to feel listened to by someone as if they were motivationally interviewed in a clinical setting. Finally, participants wrote down their plan of how and when to leave their abusive partner. The I-DECIDE model significantly increased self-efficacy, awareness, and perceived social support among battered women.

Limitations of TI-DV Interventions

As a relatively new practice, TI-DV interventions posited limitations to be addressed by further research. The first major drawback is that TI-DV interventions lack an implementation blueprint, although health organizations (SAMHSA, 2014) and empirical studies (Miller et al., 2011; Miller et al., 2016; Sullivan et al., 2018; Tarzia et al., 2016) suggested guidelines, such as psychoeducation, empowerment, and trauma-informed safety plans. It remains unclear how and in what format those components should be communicated. Second, battered women with childhood trauma are likely from underrepresented groups with limited financial and healthcare access (WHO, 2012). As TIC tends to be implemented in a clinical setting, battered women without health insurance may not receive the service. The high prevalence of childhood trauma and DV (CDC, 2012a; WHO, 2012), in contrast to a low TIC rate, may worsen health inequity as a global public health crisis.

Third, research suggested that individuals with childhood trauma process social information differently from healthy subjects (Dykas & Cassidy, 2011). Examining the roles of childhood trauma-driven traits in trauma-informed information processing is vital

to increase TI-DV intervention effectiveness. Since battered women with childhood trauma likely have distorted attitudes about the self, the partner, and the relationship (Epstein, 2012), identifying the suitable format and content is necessary to increase information processing and attitude changes. The next part discusses information processing among individuals with childhood trauma and focuses on two theoretical frameworks: a) Cognitive Experiential Self Theory as a dual information-processing model and b) trauma-driven traits and information processing.

Cognitive Experiential Self Theory (CEST): A Dual Information Processing Model

Theoretical Background

The Cognitive Experiential Self Theory (CEST) (Epstein, 1991) is a personality-related information processing concept applied in communication (Berger, 2005; Braverman, 2008; Dunlop et al., 2009) and psychology (Epstein, 2012) research. The theory is grounded on phenomenological concepts, learning theory, cognitive theory, psychoanalytic frameworks, and emotion concepts (Epstein, 2012). CEST proposes that humans process information via two pathways, including cognitive and experiential. The cognitive pathway occurs with conscious awareness, is logical inferent, related to evidence, and takes longer to implement (Epstein, 2012). On the other hand, the experiential pathway likely occurs at the preconscious level, is related to past experiences and relevant affect, might not be logical but can be rational and fast (Epstein, 2012). Experiential processing is associated with heuristic cues, such as a recipient's feelings towards received information and perceived self-relevance with the information (Epstein, 2012). The experiential system in humans is thought to be like the system used by other species to effectively adapt to their environments over evolution (Epstein, 2012).

The cognitive system among individuals without psychopathological traits is generally associated with positive emotional adjustments, such as low anxiety, low depression, low stress, low neuroticism, high self-esteem, and high perception of a meaningful life (Epstein, 2012). On the other hand, experiential thinking tendencies are more associated with emotional-based decision-making, empathy, creativity, aesthetic judgment, and satisfying interpersonal relationships (Epstein, 2012). The experiential system is associated with experiential intellectual, which was found to increase over time and is referred to as 'wisdom.' In contrast, the cognitive system is associated with intellectual intelligence, which is likely at peak during young adulthood and then decreases over time (Epstein, 2012).

Epstein (2003) believes that attitudes and behaviors are influenced by both cognitive and experiential systems, although the experiential system is thought to be more adaptive and precedes the cognitive system regarding its evolutionary history. The two information processing routes are independent but interactive and may happen simultaneously or sequentially (Epstein, 2012). Individuals have fundamental beliefs about the self, the world, and the relationship between the self and the world, and those beliefs construct information processing systems both in cognitive and experiential manners (Catlin & Epstein, 1992). The fundamental beliefs shape an individual's theories of reality (Catlin & Epstein, 1992), which is crucial for humans' daily functioning and intimate relationship processing (Epstein, 1985). A person's theory of reality is hypothetically an unconscious concept; one may not describe it when asked to do so (Epstein, 1985).

Early life theories of reality impact the internalization of new experiences, the

development of new attitudes, and personality over the lifespan (Catlin & Epstein, 1992; Epstein, 1985). If a person perceives that the self is worthy, others can be trusted, and the world is benevolent, such beliefs likely connect with cognitive-affective environments in a self-nurturing way, such as high self-esteem development, compassion towards others, and healthy romantic relationships (Epstein, 2012). If one thinks the self is worthless, others are not trustworthy, and the world is malevolent, those beliefs may lead to distorted personality traits and unhealthy frameworks regarding the self and social relationships, potentially yielding domestic violence involvement (Dykas & Cassidy, 2011; Epstein, 2012).

Epstein (2012) believed that individuals' psychodynamics are influenced by the interaction between motives, defenses, and attitudes constructed via experiential and cognitive systems. The experiential pathway is related to implicit attitudes or thoughts that individuals are unaware of having. The system is cultivated through upbringing and social relationships (Catlin & Epstein, 1992; Teglasi & Epstein, 1998). The experiential processing system predicts spontaneous goal-directed action, persists over time, and can be impactful despite the absence of specific social demands (Teglasi & Epstein, 1998). On the contrary, the cognitive system is associated with explicit attitudes, which construct inferential rules and culturally transmitted knowledge (Teglasi & Epstein, 1998). Explicit attitudes influence one's socializing demands and predict reactions to situations that provide some social incentives. Adjusting implicit attitudes is more challenging than explicit attitudes yet may provide effective attitudinal and behavioral changes (Epstein, 2012). Growing up in an abusive environment may result in dysfunctional implicit and explicit attitudes towards the self and social situations (Dykas

& Cassidi, 2011). If the patterns persist at a severe level may lead to the development of childhood trauma-driven psychosocial traits, such as unhealthy attachments and borderline personality disorder symptoms (Dykas & Cassidi, 2011; Fenske et al., 2015). A core feature of those traits is social-communicative inflexibilities, impacting social information processing and abusive relationship involvement (Dykas & Cassidi, 2011; Fenske et al., 2015).

CEST posits that individuals may be predisposed to one information processing style than the other across social circumstances and information (Epstein, 1991; Novak & Hoffman, 2009). For most circumstances, human behaviors are determined by what 'feels' good and bad more than what is 'objectively reasonable' (Epstein, 1985). When an individual experiences emotional arousal, the experiential system automatically and spontaneously searches for existing memories to encode the ongoing event (Epstein, 2012). If existing memories associated with the event are favorable, people tend to confront the event and allow themselves to feel. If the memories are unfavorable, people may avoid experiencing their feelings, leading to avoiding or being emotionally trapped in the event (Epstein, 2012). Predisposition to the experiential system is likely pronounced among individuals with certain childhood trauma-driven traits, such as borderline personality disorder symptoms and anxious attachment patterns, of which a feature is fear of abandonment (Dykas & Cassidi, 2011; Fenske et al., 2015). However, certain trauma-driven traits such as avoidant attachment patterns may be associated with cognitive information processing tendencies, such as cognitive suppression or attentional shifting from cues triggering painful childhood memories to irrelevant tasks (Dykas & Cassidi, 2011; Fenske et al., 2015). More information regarding information processing

styles and childhood experiences is discussed in the following section.

Dual Information Processing Systems and Childhood Experiences

Despite the experiential system as human's default mode for daily functioning, CEST suggested that one may be predisposed to develop and utilize a specific information processing style in response to social relationships related information, such as information about intimate partners or parental figures (Catlin & Epstein, 1992; Teglasi & Epstein, 1998). Information processing patterns, including cognitive and experiential systems, are significantly constructed during childhood when individuals rely on primary caregivers for survival and have limited cognitive abilities (Epstein, 2012). Therefore, childhood internal working models are broad, derived from significant emotions associated with early-life authority figures, and influential in determining one's behaviors and social relationships in adulthood (Epstein, 1985, 2012).

Catlin and Epstein (1992) stated that human's cognitive and experiential fundamental beliefs include self-esteem, the meaningfulness of life, views of others, love-worthiness, and competence. The fundamental beliefs are influenced by one's relationships with primary caregivers and extreme life events, such as the death of a beloved significant other (Catlin & Epstein, 1992). One's relationship with parents was found to moderate the impacts of highly favorable life events and the perceived meaningfulness of life (Epstein, 2012). People with healthy attachments with their parents appreciate their meaningfulness in life when an extremely favorable event happens to them (Epstein, 2012). The relationship is not significant among people with unhealthy attachments with their parents (Epstein, 2012). Those people tend not to appreciate the meaningfulness of life, although a good event happens to them. Believing

that life is meaningful may make them vulnerable to destabilize changes about their core beliefs: life and the self are worthless (Epstein, 2012).

Individuals with adverse early-life experiences often develop childhood trauma-driven psychosocial traits, such as borderline personality disorder (BPD) symptoms and unhealthy attachment styles, which impacts tendencies to form and utilize a specific information processing pattern, particularly in intimate social relationships (Dykas & Cassidi, 2011; Feske et al., 2015). Individuals with anxious attachment patterns and BPD tendencies, of which a core feature is fear of abandonment, are likely sensitive to experiential thinking styles: emotional, quick to be implemented, reactive to external cues (Dykas & Cassidi, 2011; Fenske et al., 2015; Niedtfeld et al., 2017). A predictor of BPD traits and anxious attachment development is perceived threats from emotional instabilities of primary caregivers during early life, which likely creates one's sense of insecurities and feelings that the daily living environment is unsafe (Dykas & Cassidi, 2011; Niedtfeld et al., 2017). The experiential system is associated with emotional experiences, especially during childhood (Dykas & Cassidi, 2011l; Leyh, Heinisch, Kungl, & Spangker, 2016). Thus, individuals with adverse childhood events, especially those with anxious attachments or BPD traits, may develop dysfunctional experiential thinking patterns, such as staying in an abusive relationship or clinging to a partner despite the relationship termination (Leyh et al., 2016).

On the other hand, individuals with avoidant attachment patterns towards their parental figures tend to develop and use cognitive thinking patterns than experiential thinking patterns in the context of intimate social relationships (Ghafarimoghadam & Dehghani-Arani, 2019; Liu, Ding, Lu, & Chen, 2017). Avoidant individuals likely utilize

their cognitive abilities to suppress and divert attention away from intimacy-related information that potentially reminds them of painful childhood memories, such as the unpredictable physical presence of their primary caregivers (Dykas & Cassidi, 2011). Constantly using cognitive resources to suppress and avoid processing intimacy-related information, people with avoidant attachments are prone to cognitive information processing patterns (Ghafarimoghadam & Dehghani-Arani, 2019; Liu et al., 2017). Those cognitive patterns, in general, and inhibitory control towards attachment figures-related information, in particular, may keep avoidant individuals engaged in an intimate abusive relationship. Avoidant individuals may not want to appraise the situation and, thus, are less likely to leave their abusive partners.

Narratives For Attitude Changes and CEST

Narratives are an effective communication tool, especially among individuals with experiential information processing tendencies (Epstein, 2003, 2013; Shen, Sheer, & Li, 2015). Although there is no consensus regarding the definition, narratives have been often referred to as "a representation of connected events and characters that have an identifiable structure, are bound in space and time, and contain implicit or explicit messages about the topic being addressed" (Kreuter et al., 2007, p. 222). Narratives generally include the discussions of characters, one or more events associated with the characters, and a plot (Braddock and Dillard, 2016; Kreuter et al., 2007). In other words, "a message may be called a narrative if it is a story that contains information about the setting, characters, and their motivations"(Braddock and Dillard, 2016, p.1). Narratives can be communicated in different forms, such as entertainment education, journalism, literature, and story-telling (Kreuter et al., 2007). Among different types of narratives,

first-person narratives were found to significantly influence health behaviors (Hinyard & Kreuter, 2007), such as HIV testing (Rothman, Kelly, Weinstein, & O'Leary, 1999), Hepatitis B virus vaccination (de Wit, Das, & Vet, 2008), and cancer prevention behaviors (Dillard, Fagerlin, Cin, Zikmund-Fisher, & Ubel, 2010; Kreuter et al., 2010; McQueen, Kreuter, Kalesan, & Alcaraz, 2011). First-person narratives are sometimes referred to as first-hand experiential stories, testimonials, exemplars, anecdotes, or case histories (Dillard & Hisler, 2015).

Attitude changes via narratives depend on two factors: self-referencing and emotional response (Dunlop et al., 2009; Moyer-Gusé, 2008; Moyer-Gusé and Nabi, 2010; Murphy et al., 2013). Self-referencing is a CEST concept, referring to the perceived relevance of new information with what was previously stored in memory (Burnkrant & Unnava, 1989, 1995). The self-referencing concept is consistent with the perceived involvement concept of the Elaboration Likelihood Model (ELM) (Petty & Cacioppo, 1986), a dual information processing framework well-validated across sample groups (Cyr, Head, Lim, & Stibe, 2018; Lee, 2012; Leong et al., 2017). ELM proposes that perceived involvement is the recognition that persuasive messages are relevant to oneself and their goal (Petty & Cacioppo, 1986). Like CEST, ELM posited that relating narrative messages to recipients might increase persuasion effects (Petty & Cacioppo, 1986). However, perceived involvement of ELM is only one aspect of CEST's self-referencing concept, which emphasizes message perception in relevance to one's emotions, life stories, and existing memories (Dunlop et al., 2009). Self-referencing is also associated with enhancing and recalling persuasive information, which benefits knowledge construction, primarily through the experiential pathway (Dunlop et al., 2009;

Epstein, 2012).

While CEST suggested narrative effectiveness among individuals with experiential processing tendencies through high self-referencing to the messages, ELM studies argued narrative effectiveness despite low involvement with a story. However, the perceived involvement of ELM is more cognitive rather than experiential oriented (Petty & Cacioppo, 1986; Stephenson, Benoit, & Tschida, 2001). Research suggested that health narratives greater predict attitude change than expository messages among people with low cognitive involvement with the information (Braverman, 2008). Low cognitive involvement enables recipients to process information in a cognitively effortless manner. Therefore, people with cognitive information processing tendencies at a low level might be receptive to narratives, which naturally require low analytical thinking to comprehend (Epstein, 2012). In conclusion, individuals may respond to narratives if they have high experiential processing tendencies, low cognitive information processing patterns, and perceived personally and emotionally relevant messages (Epstein, 2012).

In addition to self-referencing, emotional involvement could be another mechanism of narrative effectiveness (Murphy et al., 2013). Compared to non-narratives, narratives were proved to activate more emotions and predicted greater message recalls, especially if a story discusses social relationships personally related to recipients (McQueen et al., 2011; Myrick, 2015, Ramanadhan et al., 2017). Emotional involvement was a significant mediator between viewing narratives and increased interpersonal discussions after the exposure (Dunlop et al., 2008). Narrative effectiveness via emotional involvement is thought to be pronounced among individuals who enjoy and seek out emotion-evoking experiences (Ophir, Sangalang, & Cappella, 2021). In other

words, experiential individuals who like to feel extremes of sadness, happiness, and other emotions could be easily persuaded by narratives via emotional engagement (Ophir et al., 2021). On the other hand, emotional engagement is likely less effective among individuals with cognitive processing tendencies, who tend to enjoy communication forms that require mental efforts, such as reading a book or fact-based articles (Green & Jenkins, 2014).

Research documented that narrative effectiveness via emotional engagement occurs from 'emotional flow' (i.e., the change of emotions throughout exposure to a narrative) rather than 'static emotions' (Nabi & Green, 2014). For example, reading a story in which a protagonist's wellbeing and happiness are taken due to some events, but the protagonist finally overcomes those obstacles at the end may lead to emotional shifts. Greater persuasion effects, thus, may occur from such emotional shifting rather than reading a story of which recipients experience only one stable emotion (Archer & Jockers, 2016; Fitzgerald et al., 2019). Trauma-informed narratives that portray a story of one suffering from early-life trauma and relevant impacts, such as DV victimization, but finally overcoming them could be an effective communication targeting battered women with ACE.

First-person narratives predicted greater persuasion effects across scenarios than non-narrative messages (e.g., statistical information). For example, a longitudinal experiment randomly assigned African American women who had low-risk perceptions of breast cancer into two groups of video messages, including a narrative from a survivor versus statistics about breast cancer (Kreuter et al., 2010). Six months later, participants in the narrative group were more likely than those who viewed the statistics to report

breast cancer as a top concern and showed greater intentions to have a mammogram. Dillard and colleagues (2010) examined the effects of the first-person narrative about colon cancer screening on older adults' risk perceptions of colon cancer and their intentions for screening next year. Participants in every condition received general information, such as the definition of colon cancer, its risk factors, and screening procedures. Those in the treatment group received additional information in the form of a first-person narrative. The results showed that relative to the non-narrative groups, participants in the narrative condition significantly reported greater risk perceptions of cancer and their intentions for screening in the next year.

According to a CEST perspective, storytelling may be more effective than other communication forms because the experiential system likely precedes the cognitive system on daily functioning for most people (Dillard et al., 2010; Kreuter et al., 2010). The assumption could differ among people with trauma whose information processing styles vary across trauma-driven traits and social contexts. For instance, individuals with BPD traits or anxious attachment patterns are more prone to experiential processing and external arousal, whereas individuals with avoidant attachment patterns are more sensitive towards cognitive processing to avoid psychological pain (Dykas & Cassidi, 2011; Fenske et al., 2015).

Whereas studies suggested the promising results of first-person narratives for attitude change, contexts, and vulnerable groups in which narratives are compelling remain unclear. For instance, among avoidant individuals whose inhibitory control and attentional shifts are often activated in response to emotional and attachment figures related cues (Dykas & Cassidi, 2011; Fenske et al., 2015), narratives about social

relationships might be less compelling than factual or statistical messages. A meta-analysis argued that narratives are less compelling than statistics messages for specific health communication topics, such as disease detection and prevention behaviors (Shen, Sheer, & Li, 2015). Due to the conflict of literature and a lack of evidence regarding circumstances in which narratives are promising, examining the effectiveness of a health intervention narrative across individuals' information processing tendencies and topics may be helpful.

Prior research has examined potential moderators of narrative effects on attitude changes. Example moderators include affect (McQueen et al., 2011), identification with a character (Dillard & Main, 2013; Kreuter et al., 2007; McQueen et al., 2011), and vividness (Janssen, van Osch, de Vries, & Lechner, 2013). However, the moderating roles of perceived information processing tendencies (e.g., cognitive versus experiential) and psychosocial traits associated with one's life experiences (e.g., insecure attachments and BPD traits) have been rarely examined.

CEST posited that individuals process and view social information via their lens of constructed reality (Epstein, 2012). Understanding how individuals' psychological differences interact with their information processing predispositions in response to a narrative might extend health communication literature. Exploring narrative effectiveness and the moderating roles of childhood trauma-driven traits is particularly vital in the context of trauma-informed domestic violence interventions for reasons. First, recipients likely develop social-communicative inflexibilities due to past trauma and may be less receptive to traditional non-narrative interventions (e.g., DV statistics and resources). Second, like other health topics, narratives showed effectiveness on DV (Orang et al.,

2018). An experiment revealed greater symptoms reduction in PTSD, depression, and perceived stress over time among battered women after viewing a first-person narrative (i.e., a survivor's story) relative to control messages (Orang et al., 2018). The effectiveness may be intensified if narratives are trauma-informed and tailored to match recipients' life experiences.

Childhood Trauma Driven Traits and Information Processing

Borderline Personality Disorder

Research reported a strong correlation between ACE and the development of borderline personality disorder (BPD) symptoms, which may not necessarily indicate the development of the disorder itself (Lazarus et al., 2014; Thekkumthala et al., 2019). BPD is defined as "a disorder of social communication" (Luyten, Campbell, & Fonagy, 2019) and "social-communicative inflexibilities" (Lazarus, Cheavens, Festa, & Rosentha, 2014) because the symptoms are related to inabilities to utilize social information to form or readjust one's attitudes and sense of self-continuity (Luyten et al., 2019). The DSM-5 posited nine criteria of BPD diagnosis, such as impulsive behaviors, affective instability, chronic empty feelings, and frantic efforts to avoid real or imagine abandonment as a core symptom (APA, 2013). BPD is thought to be predicted by factors, such as genetic predisposition and adverse childhood experiences, which impact one's development of the frontotemporal brain regulating emotions and cognitions (Rodriguez-Srednicki & Twaite, 2006). Individuals with BPD traits tend to experience daily difficult communication and intense anger, anxiety, and depression episodes that may last from hours to days (APA, 2013).

Relative to subjects without BPD traits in the control group, individuals with BPD traits likely develop attentional biases towards BPD congruent cues, such as words that trigger perceived or actual abandonment, words related to abuse, negative self-descriptors, and words referring to malevolent views of others (Arntz, Appels, & Sieswerda, 2000; Fenske et al., 2015; Kaiser, Jacob, Domes, & Arntz, 2016). Arntz and colleagues (2000) reported that people suffering from BPD are more responsive towards three classes of BPD-specific words relative to people without BPD. The three classes include a) words associated with (sexual) abuse (i.e., 'abuse,' 'secret,' 'sex,' 'incest,' 'handling,' 'deflowering,' and 'blackmail'), b) negative self-descriptors (i.e., 'bad,' 'guilty,' 'helpless,' 'labile,' 'self-blame,' 'lonely,' 'vulnerable,' and 'powerless'), and c) words referring to malevolent views of others (i.e., 'wrongdoer,' 'mean,' 'dishonesty,' 'rejection,' 'abandonment,' 'cruel,' 'deceit,' and 'lying').

In addition to BPD congruent social information, systematic reviews reported less precision in recognizing and understanding negative visual cues among individuals with BPD (Fonagy, Luyten, Alison, & Campbell, 2017a,b; Lazarus et al., 2014). Individuals with BPD traits showed overwhelmingly emotional responses towards emotional visual cues, such as angry and fearful faces, in experimental conditions, resulting in a lower ability to solve social problems than healthy participants (Dixon-Gordon, Chapman, Lovasz, & Walters, 2011). The results signified predisposition to an automatic, distorted experiential information processing even when cognitive information processing is needed, such as when individuals are asked to solve social tasks (Dixon-Gordon et al., 2011). Even neutral visual information (e.g., neutral faces) might be negatively interpreted from a BPD salient framework as individuals with BPD typically

expect and inaccurately perceive social rejection from others (Daros et al., 2013; Niedtfeld et al., 2017).

Besides BPD congruent words and negative visual social cues, individuals with BPD are sensitive towards positive cues in a maladaptive way due to expected social rejections from others (Liebke et al., 2018). In an experiment, BPD participants and subjects without the symptoms were asked to interact with digital avatars and were convinced that those avatars are human players (Liebke et al., 2018). In the beginning, BPD participants expressed fewer initial expectations of being socially accepted relative to control subjects. After receiving positive social feedback (i.e., social acceptance), but not negative feedback (i.e., social rejection), participants with BPD symptoms expressed difficulties in dealing with signals of being accepted by others instead of adjusting their expectations (i.e., increasing social expectation) (Liebke et al., 2018). BPD individuals expressed less social cooperation after experiencing social acceptance from digital avatars relative to controls. The results suggested impaired cognitive information processing and maladaptive behavioral responses among individuals with BPD traits even in a positive communication context—the study controlled for BPD participants' liking of their interaction partners and the demand to become acquainted.

Research found that individuals with BPD traits expressed more difficulty remembering positive words, suggesting impaired cognitive information processing to process positive information (Domes et al., 2006). BPD is also related to recalling negative memories more than positive ones (Korfine & Hooley, 2000), which is a potential indicator of distorted experiential information processing predisposition. Korfine and Hooley (2000) conducted an experiment and assigned participants to various

word types, including neutral, positive, and BPD salient words. Compared to people without BPD traits, participants with BPD symptoms recalled more BPD salient words, indicating that people with BPD's vulnerabilities could memorize negative words and perhaps store more negative memories. Sieswerda and colleagues (2007) randomly assigned participants without BPD and individuals with the symptoms to be exposed to one of the three-word types: positive and negative words associated with BPD (e.g., "powerless" and "powerful," "unacceptable" and "worthy," "malevolent," "reliable"), a mix of general negative and positive words (e.g., "stingy," "joyfulness"), and neutral worlds about business and science (e.g., "practical," "abstract"). Relative to subjects without BPD and people with cluster C personality disorders (e.g., obsessive-compulsive disorder), people with BPD were more sensitive towards negative words, including general and BPD specific.

Despite not directly mentioning the correlations between BPD and CEST information processing routes (i.e., cognitive and experiential), clinical studies suggested a potential interaction between BPD and the dual information processing routes in attitudinal development via social empathy (Luyten et al., 2019). Social empathy is categorized into cognitive empathy, referring to recognizing and estimating others' emotional intensity, and affective empathy, referring to the ability to share others' feelings without being directly exposed to any emotional stimulus (Kerr-Gaffney, Harrison, & Tchanturia, 2019). Studies suggested the correlations between BPD and impaired cognitive empathy, a similar concept to cognitive information processing patterns, and the relationships between BPD and high affective empathy, a comparable concept to experiential information processing tendencies (Fonagy et al., 2017a,b).

Individuals with BPD likely suffered from deficit cognitive empathy and relevant information processing, especially when exposed to visual social cues (Bortolla et al., 2020). Participants with BPD traits reported less confidence in rating emotional intensity from facial expressions than controls without the symptoms (Thome et al., 2016). Impaired emotional recognitions also occurred after adults with BPD were exposed to short-film stimulus containing communication aspects, including facial expressions, speech content, and prosody (Preissler et al., 2010). A lack of cognitive empathy or confidence in cognitive information processing may lead to social withdrawal and rejection of new information (Fonagy et al., 2017a,b), including intervention messages among individuals with BPD symptoms.

Regarding heightened emotional empathy, a similar concept to distorted experiential information processing patterns, individuals with BPD tend to manifest the trait when exposed to non-verbal social cues (Luyten et al., 2019). Participants with BPD expressed more emotional empathy when verbal communication is neutral, while facial and prosody expressions are emotional, especially for sadness and fear (Niedtfeld et al., 2017). The results are the opposite of individuals without BPD, who showed the lowest emotional empathy scores when exposed to neutral speech with emotional facial expression and prosody (Regenbogen et al., 2012). When information from communication channels is contradictory (e.g., neutral verbal content with a fearful face and voice), individuals with BPD tend to rely on non-verbal more than verbal cues (Niedtfeld et al., 2017). Despite evidence for emotional empathy, studies addressed that the aspect among individuals with BPD is more about personal distress than genuine

empathic concern, which is a more mature form of empathy and similar to compassion (Dziobek et al., 2011; Niedtfeld et al., 2017).

Interestingly, when all communicational aspects – prosody, facial expression, and speech content, are emotional – people with BPD expressed lower emotional empathy than healthy controls or even experienced deficit emotional empathy (Dziobek et al., 2011; Niedtfeld et al., 2017). Emotional empathy deficits could occur because people with BPD naturally experience constant negative emotional states. Too much emotional information may interfere with their emotional empathy (Niedtfeld et al., 2017). Individuals with BPD also reported less familiarity with happiness or neutral feelings in their daily life and frequently experienced sadness and fear, which may decrease their emotional empathy in daily functioning (Ebner-Priemer et al., 2005; Niedtfeld et al., 2017).

Despite evidence regarding impaired cognitive information processing and heightened experiential information processing towards non-verbal, visual cues, the interaction between BPD traits and information processing styles when exposed to textual, trauma-informed information remains unclear. The issue should be further examined, especially in the context of domestic violence interventions, of which the content is textual mainly to avoid the representations of brutal domestic violence images that may retraumatize recipients.

Insecure Attachment Patterns

In addition to BPD, insecure attachment patterns are childhood trauma-driven traits that may interfere with one's effective social information processing (Dykas & Cassidy, 2011; Dewitte & De Houwer, 2009). Bowlby (1979) proposes that repeated

interactions with an attachment figure in the early stage of human development construct internal working models, which predict information processing and set up expectations of the self, others, and social interactions between the self and others. Systematic reviews of attachment patterns and information processing across lifespan indicated that individuals with a secure attachment pattern likely process positive and negative social information in a relatively open manner (Dykas, & Cassidy, 2011; Pietromonaco & Beck, 2015). On the other hand, individuals with an insecure attachment style process information, especially for information associated with intimacy, depending on whether the information potentially causes psychological pain (Dykas & Cassidy, 2011). If the information induces psychological pain, individuals with an insecure attachment likely avoid further information processing (Dykas & Cassidy, 2011; Pietromonaco & Beck, 2015). Conversely, if the information is unlikely to cause psychological pain, insecure individuals may process the information schematically consistent with their negative attachment-related experiences (Dykas & Cassidy, 2011; Pietromonaco & Beck, 2015). Insecure attachments are also related to poorer memory for attachment-related information but enhanced memory in other aspects (Dykas & Cassidy, 2011).

Impaired attachment patterns may differently influence information processing. For example, anxious individuals tend to be extremely sensitive towards threats in the surrounding, positing attentional biases towards threat stimuli and hypervigilance towards information associated with potential abandonment and rejection (Atkinson et al., 2009; Dewitte et al., 2007; van Emmichoven et al., 2003). On the other hand, avoidant individuals tend to avoid processing attachment-related information, such as messages about attachment figures or information regarding maintaining an intimate relationship

(Dykas & Cassidy, 2011; Liu et al., 2017). Being exposed to attachment-related messages, especially those that remind painful memories, avoidant individuals may shift their attention from processing the information to other irrelevant tasks (Pietromonaco & Beck, 2015).

Van Emmichoven and colleagues (2003) used the Stroop task and found that avoidant individuals performed better in naming the colors of threatening related words (but not positive or neutral words) compared to secure participants. Avoidant individuals likely suppressed their attention to perceived threatening information and, therefore, could quickly finish the Stroop task. Secure participants, on the other hand, were more open to process emotionally challenging information. The following data collection indicated that avoidant individuals recalled fewer emotionally related words compared to secure individuals. Wais and Treboux (2003) mentioned the significant relationship between secure attachment at the baseline (i.e., before marriage) and women's ability to generate stories about romantic partners ten years later. The results suggested secure women's sensitivities towards positive narratives associated with intimacy. An experiment applied a Stroop task to examine attentional biases among women with children (Atkinson et al., 2009). Insecure, anxious mothers paid greater attention to negative words compared to neutral words and secure participants.

The correlations between attachment styles and information processing patterns persist across the lifespan and become more pronounced in adulthood, especially when one steps into a romantic relationship (Dykas & Cassidy, 2011; Pietromonaco & Beck, 2015). When unstable parents raise infants with an unpredictable pattern in providing comfort, infants tend to perceive that parents are unreliable caregivers who should be

kept nearby to increase the chance to gain access to the caregivers if needed (Dykas & Cassidy, 2011). When those insecure infants become adults, they may have difficulty terminating an intimate abusive relationship (Loving & Sbarra, 2015). An abusive partner may be perceived as an attachment figure to be kept nearby if needed despite their abusive behaviors (Loving & Sbarra, 2015).

Attachment studies suggested potential interactions between attachment patterns and information processing styles in predicting attitude formation and memory recalls (Dykas & Cassidi, 2011; Pietromonaco & Beck, 2015). Growing up in an abusive environment, some individuals may be prone to develop and use cognitive information processing to rationalize the situation for survival, while those from a healthy family less apply the system to solve life problems during childhood (Block & Kremen, 1996; Epstein, Pacini, Denes-Raj & Heier, 1996; Pacini & Epstein, 1999). However, the scenario may be different across attachment styles. For example, a Stroop task examined individuals' biases towards attachment-related information and found that anxious individuals paid more attention to attachment-related worlds under both stressful and non-stressful conditions (Dewitte et al., 2007; Dewitte & De Houwer, 2010; Mikulincer, Gillath, & Shaver, 2002), indicating implicit experiential, emotional information processing tendencies. On the other hand, avoidant individuals shifted their attention from positive and negative attachment-related information to irrelevant tasks, indicating that the process is related to implicit cognitive information processing such as inhibitory control and attentional shift (Edelstein & Gillath, 2008; Mikulincer et al., 2002).

Interestingly, studies reported that insecure individuals avoided positive information processing if the information is associated with attachments (e.g.,

information about scenarios in which an attachment figure is considered a secure base) (Dykas & Cassidy, 2011; Pietromonaco & Beck, 2015). Insecure individuals had rarely experienced when their caregivers were emotionally available to them when needed (Dykas & Cassidy, 2011; Pietromonaco & Beck, 2015). Processing positive information associated with others' attachment figure stabilities may lead to perceiving that they have not received love, care, and support from their primary caregivers growing up (Dykas & Cassidy, 2011; Pietromonaco & Beck, 2015). As a result, insecure individuals tend to shift attention to process neutral parts of attachment-related information and ignore the parts that can trigger them emotionally (Bowlby, 1980).

Lastly, it should be noted that although social information may not be perceived to cause any psychological pain, individuals likely process information in a pattern influenced by the internal working models of attachment (Bretherton & Munholland, 1999, 2008). Insecure individuals tend to process general information via a negative light, whereas secure individuals likely do so via a positive light (Bowlby, 1973; Bretherton & Munholland, 1999, 2008). In the DV context, battered women may respond to TI-DV messages differently, depending on the interaction between their attachment styles and information processing patterns.

The Current Study

Although adverse childhood experiences (ACE) predict five of the top ten leading causes of death in the United States (CDC, 2021b), childhood-trauma informed interventions at the mass level are sparse. Clinical trauma-informed practices exist (Sullivan et al., 2018; Wilson et al., 2015), yet marginalized individuals or those with unawareness of trauma may not benefit. An outcome of ACE is domestic violence (DV)

victimization among women (Li et al., 2019). However, not many DV interventions at a large scale are childhood trauma-informed. Introducing a communication tool to decrease health disparities, the current study brings clinical trauma informed-care to a larger scale intervention as trauma-informed messages (TIM) to promote DV termination among battered women with ACE. Fundamental principles of trauma-informed care, including empowering statements regarding trauma healing journey, psychoeducation, and empathetic safety plans (i.e., suggesting doable steps to terminate DV instead of advising abrupt relationship termination), are applied in the messages. Guided by the efficacy and effectiveness of trauma-informed DV interventions in clinics and women's shelters (Miller et al., 2011; Miller et al., 2016; Sullivan et al., 2018), the current study TIM effectiveness in influencing DV termination related attitudes than conventional intervention messages.

H1: Trauma-informed messages (TIM) predict DV termination attitudes: leaving intention, trauma knowledge, domestic violence self-efficacy, and safety empowerment aspects (i.e., perceived social support, perceived internal tools, less perceived tradeoffs in ending the relationship) relative to conventional DV messages.

As literature suggested the likelihood of impaired information processing among individuals with ACE-driven traits, including borderline personality disorder (BPD) symptoms and insecure attachment patterns (i.e., anxious and avoidant) towards parental figures (Dykas & Cassidi, 2015; Niedtfeld et al., 2017; Pietromonaco & Beck, 2015), the moderating roles of those traits are assessed. TIM greater effectiveness than conventional DV messages is expected even among battered women with ACE-driven traits because

TIM is designed to match information processing patterns of traumatized individuals. The effectiveness, however, is hypothesized to decrease once ACE-driven traits increase.

H2: a) The effectiveness of trauma-informed messages predicted in H1 persists even among battered women with BPD traits and insecure attachment patterns (i.e., avoidant and anxious towards mother and father figures), and b) The effectiveness is less pronounced among women with high childhood trauma-driven traits than those with lower traits.

Women with an anxious attachment pattern and BPD traits expressed attentional biases towards attachment figures-related information (Dykas & Cassidy, 2011; Fenske et al., 2015), while avoidant women suppress or divert attention away from processing information associated with attachment figures or emotional cues (Liu et al., 2017). The effect sizes of TIM addressing primary caregivers and abusive partners may be more prominent among anxious women and women with BPD traits than those with avoidant attachment patterns.

H3: TIM effectiveness among women with anxious attachments towards mother and father figures and women with BPD symptoms is larger in effect sizes than among avoidant women.

The Cognitive Experiential Self Theory (Epstein, 2012) posited information processing as personality traits, including experiential and cognitive information processing tendencies, which may differ across individuals' upbringing experiences. Clinical research suggested that women with avoidant attachment patterns tend to utilize their cognitive abilities to avoid or suppress information processing when exposed to attachment-related social information (Ghafarimoghadam & Dehghani-Arani, 2019; Liu

et al., 2017). On the other hand, women with anxious attachment patterns and BPD traits are likely hypervigilant and have attentional biases towards attachment figures-related information due to their fear of abandonment (Fenske et al., 2015; Pietromonaco & Beck. 2015). Despite rare empirical studies examining the relations between information processing patterns as personality traits and childhood trauma-driven traits, avoidant individuals may be prone to cognitive information processing tendencies. In contrast, anxious women and those with BPD traits are likely more sensitive to experiential information processing patterns. Such relations may interfere with TIM effectiveness in predicting DV termination attitudes. To further explore the issue, the following research question is established:

> RQ1: Is TIM effectiveness moderated by information processing patterns (i.e., experiential and cognitive) in addition to childhood trauma-driven psychosocial traits (i.e., BPD and insecure attachments)? In other words, are three-way interactions between message conditions, trauma-driven psychosocial traits, and information processing tendencies significant in predicting DV termination outcomes?

Narrative frameworks proposed narrative effects among individuals with experiential information processing or low cognitive information processing tendencies (Dunlop et al., 2009; Epstein, 2012; Petty & Cacioppo, 1986). Experiential information processing tendencies are likely pronounced among individuals with BPD traits and anxious attachment towards parental figures (Dykas & Cassidy, 2011; Fenske et al., 2015). TIM as a narrative, therefore, may provide strong effect sizes among battered women with anxious attachment patterns and experiential information processing

tendencies. The intervention effectiveness may also be pronounced among women with low cognitive information processing tendencies, according to studies indicating the effectiveness of narrative among individuals with perceived low cognitive involvement with the topic (Manca et al., 2019; Braverman, 2008). Research indicated the comorbidity between avoidant attachment patterns and cognitive information processing tendencies (Ghafarimoghadam & Dehghani-Arani, 2019; Liu et al., 2017). Thus, the influence of low cognitive information processing on attitude changes could be intensified by avoidant attachment patterns. To explore the assumptions, the following research question asks:

> RQ2: Is TIM effectiveness specifically pronounced among battered women with a) experiential information processing and anxious attachment towards mother and father figures and b) low cognitive information processing and avoidant attachments towards mother and father figures?

Finally, attachment patterns could be assessed as a) anxious attachment towards a mother figure, b) anxious attachments towards a father figure, c) avoidant attachment towards a mother figure, and d) anxious attachment towards a father figure, according to a validated measure across sample groups such as Close Relationships-Relationship Structures (Fraley et al., 2011) (Feddern Donbaek & Elklit, 2013; Moreira, Martins, Gouveia, Canavarro, 2014; Deveci Şirin & Şen Doğan, 2012). Nonetheless, research in trauma and information processing likely assessed attachment as two categories, including anxious and avoidant patterns, and rarely investigated whether the effects of attachment styles differ across parental figures (i.e., father versus mother) (Ghafarimoghadam & Dehghani-Arani, 2019; Dykas & Cassidy, 2011; Fenske et al.,

2015; Liu et al., 2017). Due to a lack of evidence, the current research assessed all attachment types towards parental figures, as stated in the hypotheses and research questions mentioned above. The main focus of the current dissertation is TIM effectiveness and information processing among battered women with social-communicative inflexibilities. The predictive role of attachment styles across parental figures is beyond the study's scope and is explored as an additional rather than a primary research question.

RQ3 (additional RQ): Do insecure attachment patterns (i.e., anxious versus avoidant) towards mother and father figures differently interact with TIM and information processing tendencies (i.e., experiential and cognitive) in predicting DV termination outcomes?

CHAPTER III

METHOD

Procedure

The study applied a one-way between-subject design with two conditions: 1) exposure to a trauma-informed story (805 words) and 2) exposure to a traditional DV story (441 words). The experiment was conducted online using Qualtrics (online survey software). Participants were provided an incentive of 2 dollars per person. The study's landing page, publicly accessible by MTurk potential participants, did not contain information about domestic violence and childhood trauma or images related to the topics. Informed by prior trauma-informed DV online intervention (Hegarty et al., 2015; Tarzia et al., 2016), the study was identified as a "Women's Relationship Project" and mentioned the following statement.

"Are you concerned about whether your relationship is healthy? Do you sometimes wonder if you are safe? If you are a woman aged 18 to 60 and have experienced romantic relationship issues over the last six months, you are invited to participate in the project. Participation involves reading a story and answering some questions. Your participation is confidential, and you will receive up to 2 dollars as a token of participation."

Women with interest in the project were directed to the consent page. The consent form provided a trigger warning:

"You are going to read a story and answer some questions of which the content is related to domestic violence. The content might be sensitive and create some

uncomfortable feelings. You can choose not to participate if you do not want to or may quit the project anytime that you are uncomfortable."

The consent page encourages women not to use an electronic device where the partner could witness her participating in the study or accessing her internet history. Participants were instructed on how to delete browser history. Before participating in the study, women were directed to resources about domestic violence shelters and an emergency safety plan for safety purposes. Adapted from a prior online domestic violence intervention (Hegarty et al., 2015), below is the message that participants were exposed to:

"IF YOU ARE in a dangerous situation with your intimate relationship. It is critical that you talk to someone you trust, such as a friend, family member, your GP (general practitioner/family doctor), or the police. Tell them what you have been experiencing in your relationship. There is a national counseling hotline, 1-800-799-7233, that you can call anonymously for advice. For an emergency, call 911."

Women might opt not to participate in the study and still received the incentive. Before being exposed to the stimuli, women were asked to answer questionnaires associated with the moderating variables (i.e., borderline personality traits, attachment styles, and information processing patterns). Women then were randomly assigned to one of the two conditions. Before the exposure, another trigger warning was provided for emotional safety purposes. After reading the story, participants completed the rest of the survey measuring their attitudes related to domestic violence. Participation took approximately 15-20 minutes.

Participants

Amazon Mechanical Turk (MTurk) was used to recruit heterosexual women aged 18-60 years old. Participants must meet two criteria: a) reporting at least one area of adverse childhood experiences on the Adverse Childhood Experiences Scale (CDC, 2020a), and b) responding "yes" on at least one item of the Fear of an Intimate Partner Scale (Hegarty et al., 2015). The scale enables women with DV experience to participate in the study without being exposed to the words: "violence" or "abuse" such that participants do not feel confronted or challenged. In addition to the criteria mentioned above, the pre-screening excluded women who a) have been in a shelter within the past six months and b) are currently outpatient or inpatient of a psychotherapy clinic or a hospital. Shelter residents likely have received a form of intervention, which may interfere with the current intervention's effectiveness. In- or outpatient females may be suffering from a psychopathological condition and should be excluded from the current research to avoid potential re-traumatization. A power analysis (G*power version 3.1.9.2) with medium effect sizes based on prior studies (Sullivan et al., 2018; Wilson et al., 2015;) suggested 158 participants (79 per group) (f^2 = 0.25, alpha = 0.05, power = 0.8, df = 2, number of groups = 2, number of covariates = 2). Approximately 3,976 women participated in the pre-screening, and only 344 participants met the criteria. After the data management and cleaning, 289 cases were retained for the final analysis. Cases that did not pass all the attention check items (explained later in the Results section) were excluded to increase internal validity and data reliability.

Materials

The stimuli are 1) a trauma-informed story (805 words) and 2) a traditional story associated with domestic violence (441 words). Informed by narrative effectiveness in prior research (Shen et al., 2015), the stories in both conditions were depicted as a first-person narrative (i.e., the storyteller uses the word "I" in explaining her story and did not mention her name or identity to prevent demographic biases). The messages across two experimental conditions similarly discuss the following aspects: 1) the main character's verbal, physical, and sexual abuse experiences, 2) DV cycle, 3) a static emergency safety plan and a list of available resources for domestic violence. The content in both conditions was designed based on existing DV interventions (e.g., the Domestic Violence Hotline website) and online narratives about domestic violence from intervention websites. The trauma-informed condition includes trauma-formed messages designed based on existing trauma-informed DV interventions (Miller et al., 2011; Sullivan et al., 2018). The additional trauma-informed aspects include 1) the effects of childhood trauma on physical and mental health and DV victimization, 2) empowering recipients that trauma can be overcome and providing ways to deal with trauma triggers, and 3) empowering trauma-informed safety plans (i.e., suggesting doable steps to terminate an abusive relationship and using words empathizing battered women's struggles).

For emotional safety, the language and content of the stimuli in both conditions were carefully drafted and reviewed by a clinical psychologist specializing in trauma to ensure that the content does not trigger, blaming, or stigmatizing participants (see Appendix A for the experimental stimuli for both conditions). A qualitative pilot study was conducted to examine whether readers catch aspects of trauma-informed care

elements without being informed about the intervention's perspective. A convenient sampling method was used to recruit ten heterosexual females aged 18-60 years old who were then asked to read stories in both conditions (sent via emails) and describe their thoughts and feelings. All of the ten participants indicated trauma-related words, such as "trauma," "childhood trauma," "bad childhood," and "empathetic," in their responses to the TIM condition, indicating preliminary effectiveness of the material in representing critical elements of trauma-informed practices. Some participants indicated the control messages as "traditional messages found in doctor offices," which suggests the message's effectiveness in representing conventional DV intervention elements. Below are examples of participants responses to the stimuli across both conditions:

Participant #1:

"Narrative 1(TIM) felt a lot **more personal** and friendly, like the woman who wrote it was friendly and **sympathetic** with me (i.e., other women experiencing abuse.) I also thought it felt more authentic because it included more details. I noticed myself paying attention to its length and, at one point, wondered how long it was. Narrative 2 (control messages) felt less personal and maybe more generic since there were fewer details. I would almost say the tone was curt, like the woman who wrote it was not as sympathetic. She was not mean. She just wanted to tell me how to get help and move on with her day. I think the shorter length also contributed to this.

I think I would be more compelled to seek help after reading Narrative 1 (TIM) because it felt more **intimate**, **compassionate**, and authentic than Narrative 2 (control messages), which felt like something I might find in a pamphlet at a doctor's office."

Participant#2:

“The first (TIM) is longer, with much of it infused with the author's **history of abuse** informing their **current reaction to abuse**. The second piece (control messages) has none of that history...Its points are all made about the current dysfunctional relationship, instead of tying them to the one from the author's youth. The first piece (TIM) also has more tips about the **impacts of abuse**, more specifics on how to negotiate the process, and other details the second does not.”

Statistical Analysis

R Studio was used for data preparation, analysis, and visualization. Three attention check items were applied to screen out cases. Out of 344 participants, those who did not pass all of the attention check items were excluded resulting in 288 cases retained for the following data screening steps and data analysis. Linearity assumption checks were conducted, and all of the remaining cases met the assumption. No unduly influential outliers were detected, and all the cases were retained.

Regarding data analysis, descriptive statistics and correlational analysis of key variables were conducted. Linear models were implemented with message conditions (H1), the interaction terms between the conditions and trauma-driven psychosocial traits (H2 and H3), and the interaction terms between the conditions, trauma-driven traits, and information processing styles (RQ1-3) as the independent variables. Johnson-Neyman analysis techniques were applied to indicate significant interaction regions and data visualizations for two- and three-ways interactions. A probe interaction technique with Bonferroni adjustments was also applied at the levels of -1SD, mean, and +1SD of each key outcome for Type I error rate correction.

Measures

Prescreening

Adverse Childhood Experiences. The Adverse Childhood Experiences Scale (ACE) (Felitti et al., 1998) assessed individuals' childhood adverse events regarding emotional, physical, verbal abuse, and neglect. The scale consists of 10 items and has acceptable internal consistency across sample groups (Ford et al., 2014; Mersky et al., 2016). Example items include "Before your 18th birthday, did a parent or other adult in the household often or very often swear at you, insult you, put you down, or humiliate you? *or* act in a way that made you afraid that you might be physically hurt?" and "Before your 18th birthday, did a parent or other adult in the household often or very often push, grab, slap, or throw something at you? *or*
ever hit you so hard that you had marks or were injured?" Response options are "yes" (coded as 1) and "no" (coded as 0). The scores from all items were summed to create the composite of ACE, with higher scores indicating higher adverse childhood experiences. Women who scored more than or equal to one participated in the study. The alpha reliability in the current research is .77.

Fear of an intimate partner. The Fear of an Intimate Partner (Hegarty et al., 2015) measures the perceived fear of women in an abusive relationship and have experienced fear of their current partner in the past six months. The eligibility to participate in the study is determined by a "yes" response (coded as 1) to one or more of the followings: "In the past six months a partner has made you feel afraid or unsafe; has followed you or harassed you over the telephone or online; has called your names, humiliated, bullied or criticized her, or threatened you in any way; has isolated you from

your family and friends or restricted your behavior in any way; or has physically harmed you in any way; or has forced you to do sexual things you did not want to." The current alpha reliability is .70.

Outcomes

Self-efficacy associated with DV. The Domestic Violence Coping and Self-Efficacy Scale was applied to measure self-efficacy (Benight, Harding-Taylor, Midboe, & Durham, 2004). The scale consists of 30-items assessing demands to recover from abuse among battered women. Participants were asked to rate how capable they feel in coping with several psychological and environmental challenges on a visual analog scale ranging from "not at all capable" (coded as 0) to "totally capable" (coded as 100). An example item is "Managing my feelings of guilt and self-blame." Higher scores indicate higher coping efficacy associated with DV victimization. The current alpha reliability is .91.

Trauma knowledge. The Trauma-Informed Practice Scale (Goodman et al., 2016) was used to assess participants' knowledge about childhood trauma and its impacts on health and wellbeing. The TIP contains six subscales, but this current research applied the Access to Information on Trauma subscale (five items). An example item is "I have the opportunity to learn how abuse and other difficulties affect response in the body." The Trauma-Informed Practice Scale has shown good reliability across battered women groups (Goodman et al., 2015, 2016; Sullivan et al., 2018). Response options range from "not at all true" (coded a 1) to "very true" (coded as 4). Higher scores indicated more excellent knowledge about trauma. The current alpha reliability is .94.

Safety-related empowerment. Participants' feelings of empowerment were

measured using the Measure of Victim Empowerment Related to Safety scale (MOVERS) (Goodman et al., 2015). The measurement was designed to access safety-focused empowerment. Participants were instructed, "When you are responding to these questions, it is fine to think about your family's safety along with your own if that is what you usually do." The scale consists of 13 items with three subscales, including a) Internal Tools (six items) assessing the extent to which a survivor believes in her ability to develop a set of safety-related goals and accomplish them, b) Expectation of Support (four items) assessing the degree to which a survivor perceives social support to move towards safety, and c) Trade-Offs (three items) assessing the extent to which a survivor feels that her efforts to be safe would generate new problems. Examples of items include "I know my next steps" (Internal Tools), "I feel comfortable asking for help" (Expectation of Support), and "Have to give up too much" (Tradeoffs). The response option is a five-point Likert scale ranging from "never true" (coded as 1) and "always true" (coded as 5). Higher scores for Internal Tools and Expectation of Support and lower scores for Tradeoffs indicate safety-focused empowerment. The current alpha reliabilities are .81 for internal tools, .76 for social support, and .76 for tradeoffs.

Intention to leave an abusive partner. A single item was used to measure leaving intention among women who are currently with their abusive partners. The item is "How likely do you intend to end the relationship with your current partner?" The response option is a 5-point Likert scale ranging from "extremely unlikely" (coded as 1) to "extremely likely" (coded as 5).

Moderators

Information processing tendencies. The Rational-Experiential Inventory (REI;

Pacini & Epstein, 1999) was used to measure one's natural predisposition of cognitive and experiential information processing. The scale consists of 10 items across two subscales, including a) Need for Cognition (NFC) assessing cognitive processing tendencies (five items) and b) Faith in Intuition (FI) measuring experiential processing tendencies (five items). The NFC is adapted from Cacioppo and Petty (1982), and the FI was newly created by Epstein and colleagues (1996). The 10-items version has been validated and reported greater consistency in factor analyses relative to other versions of the REI (e.g., the REI-59, REI-40) (Shirzadifard et al., 2018). Example items include "I believe in trusting my hunch" (experiential) and "I enjoy intellectual challenges" (rational). Response options are a 5-point Likert scale ranging from "strongly agree" (coded as 1) to "strongly disagree" (coded as 5). All items for the NFC subscale were averaged to create a composite of cognitive information processing, and the same method was applied for the FI items to create a composite of experiential information processing tendencies. The alpha reliabilities for NFC and FI are .70 and .77, respectively.

Borderline personality disorder (BPD) traits. The McLean Screening Instrument for Borderline Personality Disorder (Zanarini et al., 2003) was used to assess BPD symptoms. The scale was developed based on the Diagnostic Interview for DSM-IV/V and consists of 10 items, with the first eight items indicating the first eight DSM-IV/V diagnostic criteria for BPD. The last two items represent the final diagnostic criteria of DSM-IV/V, including paranoia and dissociation. Example items are "Have any of your closet relationships has been troubled by a lot of arguments or repeated breakups?" and "Have you deliberately hurt yourself physically (e.g., punched yourself, cut yourself, burned yourself)?" Response items are "true" (coded as 1) and "false" (coded as 0). Items

are summed for a composite of BPD scores ranging from 0 to 10. A score of 7 is a diagnostic cut-off indicating one's tendencies to meet the criteria for BPD. The current alpha reliability is .73.

Attachment styles. Experiences in Close Relationships-Relationship Structures (ECR-RS) (Fraley et al., 2011) assess two underlying attachment dimensions: avoidance (items 1–6) and anxiety (items 7–9) across a mother figure (i.e., mother or stepmother), a father figure (i.e., mother or stepmother), romantic partner, and best friend domains. Fraley and colleagues (2011) suggested using one or more relationship domains depending on research purposes. As the current study focuses on childhood trauma-informed intervention, only the mother and father domains are applied. The response options are a Likert scale ranging from "strongly disagree" (coded as 1) to "strongly agree" (coded as 5). Higher scores reflect greater levels of insecure attachment within each relationship domain. Examples of items include "I do not feel comfortable opening up to this person" (avoidant) and "I am afraid that this person may abandon me" (anxious). The current reliabilities for avoidance and anxiety towards a mother figure are .86 and .87, respectively. For avoidance and anxiety towards a father figure, the reliabilities for both are .87. See Appendix B for all measures in the current study.

CHAPTER IV

RESULTS

Manipulation, Randomization, and Attention Check

Manipulation Checks

Manipulation checks were assessed right after participants read the story in their condition with two items. The first is "What is the story that you just read about?" with four response options including a) A woman and her intimate abusive relationship with a male partner, b) A woman, her intimate abusive relationship with a male partner, and the impacts of her childhood trauma on the relationship, c) A woman and her child custody, and d) A woman and her toxic supervisor. Participants in the trauma-informed messages (TIM) condition were expected to select option b. In contrast, those in the control condition were expected to select option a. Supporting the assumption, a cross-tabulation analysis indicated significant difference across the conditions regarding participants response, χ^2 (1) = 23.738, p <.001. Adjusted standardized residuals for a chi-square posthoc analysis revealed that participants in the TIM condition significantly selected option b more than other options (81.3%) (Z-residuals = 8.8). Those in the control condition significantly selected option a relative to others (68.2%) (Z-residuals = 8.5). Participants from both conditions who selected the options c and d were excluded to reduce internal validity threats.

The second manipulation check item asked, "How is the relationship between the woman in the story and her family of origin (i.e., her parents)?" with response options: a) They have a healthy relationship, b) She did not mention her parents, c) The relationship has been abusive, and d) She did not grow up with her parents. Participants in the TIM

condition were expected to select option c, and those in the control condition were expected to select option b. Confirming the assumption, a cross-tabulation analysis indicated significant differences across the conditions regarding participants' responses, χ^2 (3) = 101.450, p <.001. Adjusted standardized residuals for a chi-square posthoc analysis revealed that participants in the TIM group significantly selected option c more than other options (73.2%) (Z-residuals = 9.3). Those in the control condition significantly selected option b relative to others (84.0%) (Z-residuals = 9.7).

Randomization Checks

There were no significant relationships between experimental conditions and race, χ^2(1) = 2.54, p = .11, relationship status, χ^2 (1) = 1.77, p = .18, age groups, χ^2 (5) = 3.43, p = .63, education, χ^2 (3) = 1.45, p = .69, incomes, χ^2 (4) = 1.47, p = .83, employment, χ^2 (1) = 1.96, p = .16, having children, χ^2 (1) = 1.56, p = .21, and religion, χ^2 (1) = .47, p = .49. As few participants from the pilot study mentioned the stimuli's length, the narrative lengths were assessed with a single item: "Please rate the length of the story that you just read" with response options: "too short," (coded as 1) "short," "good length," "long," and "too long" (coded as 5). There are no significant relationships between perceived length and key variables, p < .05, indicating low validity threats across the experimental conditions.

Attention Checks

To ensure that participants paid attention to the stimuli and the survey, three attention check items were included, one right after the manipulation check questions, another at the beginning of the survey, and the other at the end of the survey. The item right after the stimuli is "What is the organization that was mentioned in the story?" with

the response options: a) hotline.org, b) CDC, c) the World Health Organization, and d) NIH. Participants in both conditions are expected to select option a. The other two items asked participants to select a particular response option (i.e., "Please select 'strongly agree' if you are reading this sentence") to indicate they were paying attention to answering the questions. Participants who did not pass all three attention check questions were excluded.

Data Screening and Assumption Check

Mahalanobis statistics were used to check outliers with the chi-square value at .999. Only 3 cases were indicated as having Mahalanobis values less than the chi-square cut-off point. Testing the hypothesized models resulted in similar significant results regardless of the inclusion of the outliers, and, therefore, all cases were retained. No multicollinearity was detected. A variable with a chi-square distribution pattern was simulated to test General Linear Model assumptions by regressing the variable on all key continuous variables in the dataset. All assumptions, including linearity (assessed via normal Q-Q plot), normality (assessed via a histogram), and homogeneity and independence of errors (assessed via a scatter plot), were met. See Appendix C for the visualization of the assumption checks.

Descriptive Statistics

Of participants, the majority are White (54.6%), followed by Asian or Pacific Islander (25.9%), Hispanic or Latino (9.2%), Black or African American (5.2%), Native American (2.3%), and others (2.9%). Most women are in a relationship (i.e., married or with a domestic partner) (90.2%), and 9.2% are separated, divorced, or widowed. Approximately 77.6% of participants are employed, 7.5% are homemakers, 6.3% are

students, and 8.6% are unemployed. Almost half (46%) of women are Christian, following by no religions (29.3%), Hindu (14.9%), Muslim (3.4%), Jewish (1.7%), Buddhism (.6%), and other (4%). The average age is 2.34 (*SD* = .96) on a six point-Likert scale (2 indicates 25-34 years old; 3 indicates 35-44 years old). The averaged individual income is 2 (*SD* = .92) on a 5-point Likert scale (2 is $20,000 - $44,999). The highest degree of education for most participants is a bachelor's degree (54.6%), followed by a graduate degree (28.9%) and a high school diploma (25.9%). About 51.1% of women have children. The average score of adverse childhood experiences is 4.64 (*SD* = 2.51) out of 10, whereas the average score of the fear of an intimate partner is 2.95 (*SD* = 1.67) out of six. See Table 1 for descriptive statistics and Table 2 for correlations of variables.

Table 1. Means, Standard Deviations, and Sample Sizes for each Key Variable.

	Mean	Standard Deviations	*N*
ACE	4.64	2.51	287
Fear of partner	2.95	1.67	287
NFC	3.23	.73	289
FI	3.81	.68	289
BPD	5.92	2.30	289
Avoidance: Mother	2.78	.98	289
Anxiety: Mother	2.83	1.24	289
Avoidance: Father	3.10	1.07	287
Anxiety: Father	2.77	1.25	286
Trauma knowledge	3.77	.96	288
DV self-efficacy	57.62	18.34	287
Internal tools	3.87	.66	287
Tradeoffs	3.19	1.02	287
Social support	3.71	.81	287
Leaving intention	3.10	1.41	218

Note. ACE is adverse childhood experiences, NFC is Need for Cognition assessing cognitive information processing tendencies, FI is Faith in Intuition assessing experiential information processing tendencies, BPD is borderline personality disorder symptoms, and DV is domestic violence.

Table 2. Correlations of Key Variables.

		1	2	3	4	5	6	7
1	Condition							
2	ACE	-.09						
3	Fear	-.08	.57**					
4	BPD	.13	.34**	.21**				
5	Avoidance: Mother	-.01	.18**	-.07	.16**			
6	Anxiety: Mother	.05	.39**	.29**	.30**	.28**		
7	Avoidance: Father	-.01	.06	-.15**	.11	.46**	.04	
8	Anxiety: Father	-.02	.36**	.34**	.22**	.03	.61**	.24**
9	NFC	-.04	-.05	-.06	-.12*	.00	-.16**	.04
10	FI	.02	-.16**	-.02	.07	-.05	-.02	-.03
11	Trauma knowledge	.39**	.08	-.02	.26**	-.04	.06	.02
12	Self-efficacy	-.04	.05	.04	-.17	-.12	.00	-.02
13	Internal tools	-.01	-.14	-.02	-.09	-.11	-.05	-.16**
14	Tradeoffs	.01	.25**	.32**	.14*	-.13*	.32**	-.12*
15	Social support	.00	-.06	.12*	-.15*	-.27**	.05	-.26**
16	Leaving intention	.05	.33**	.48**	.11	-.14*	.38**	-.20**

Table 2. (continued).

		8	9	10	11	12	13	14	15
9	NFC	-.09							
10	FI	-.10	.06						
11	Trauma knowledge	.10	-.02	.17**					
12	Self-efficacy	.09	.05	.10	.03				
13	Internal tools	-.09	.22**	.36**	.18**	.43**			
14	Tradeoffs	.33**	-.23**	-.02	.20**	-.06	-.16**		
15	Social support	-.01	.05	.20**	.16**	.39**	.67**	-.12*	
16	Leaving intention	.32**	-.19**	-.02	.16*	.01	.05	.46**	.20**

H1: Trauma-Informed Messages (TIM) Predict DV Termination Attitudes Relative to Conventional DV Messages

Main effects of TIM are significant on trauma knowledge, $F(1, 286) = 52.49$, $p < .001$, $R^2 = .15$, but not other outcomes, $p > .05$. Exposure to TIM resulted in higher trauma knowledge, relative to control messages ($b = .75$, $SE = .10$, $p < .001$). H1 is partially supported.

H2: a) TIM Effectiveness among Battered Women with BPD Traits and Insecure Attachment Patterns (i.e., Avoidant and Anxious towards Mother and Father Figures), and b) Less Effectiveness among Women with Higher Trauma-Driven Traits

Borderline Personality Disorder (BPD) Symptoms

BPD significantly interacted with conditions in predicting trauma knowledge, $F(3, 284) = 27.75$, $p < .001$, $R^2 = .23$, and intention to end the current relationship, $F(3, 214) = 2.74$, $p = .04$, $R^2 = .04$. Regarding trauma knowledge, a Johnson-Neyman (JN) technique indicates that TIM greater predicted the outcome than control messages at the level of BPD: less than 1*SD* (3.63) ($b = 1.04$, $SE = 0.15$, $p <.001$), the mean (5.93)($b = 0.71$, $SE = 0.10$, $p <.001$), and 1*SD* ($b = 0.38$, $SE = 0.14$, $p = .01$). Regarding intention to end the relationship, a JN technique indicates that TIM better predicted the outcome relative to control messages only among women with BPD scores less than 1*SD* (3.82) ($b = 0.55$, $SE = 0.27$, $p = .05$).

In conclusion, women with BPD traits at all levels responded more to TIM than control messages in constructing trauma knowledge, although the effectiveness decreased once BPD traits increased. However, only women with a low level of BPD traits

benefited from the intervention for leaving intention. Figures 1 and 2 reveal the interactions of TIM and BPD in predicting trauma knowledge and leaving intention, respectively.

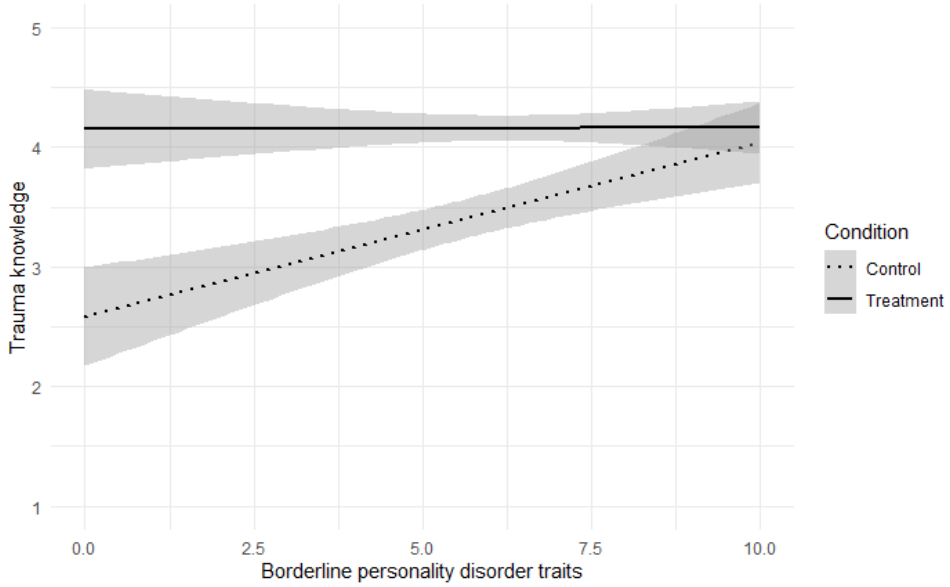

Figure 1. Interaction between conditions and BPD in predicting trauma knowledge.

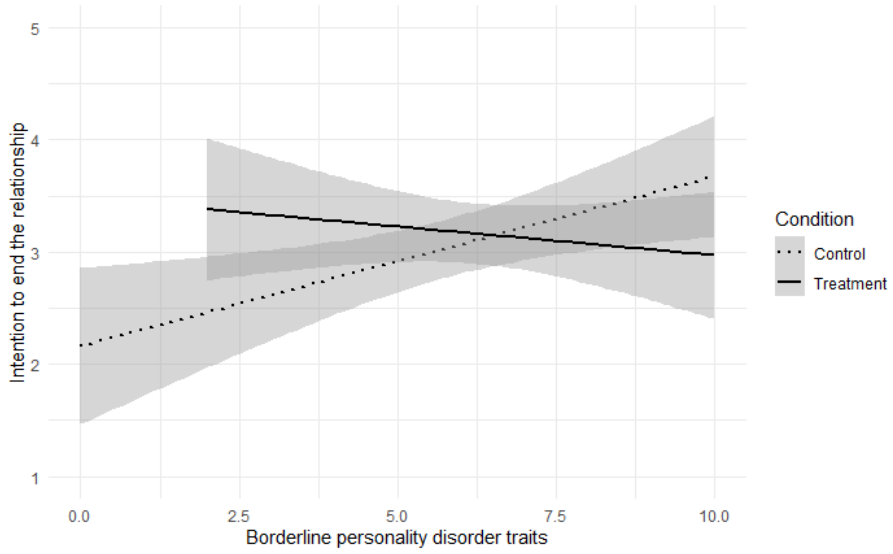

Figure 2. Interaction between conditions and BPD in predicting leaving intention.

BPD did not significantly moderate TIM effectiveness in predicting other outcomes except for trauma knowledge and leaving intention. See Table 3 for detailed estimates.

Table 3. F and t-statistics of Borderline Personality Disorder Traits as the Moderator.

	Dependent variable:					
	Trauma knowledge	Self-efficacy	Internal tools	Tradeoffs	Social support	**Leaving intention**
Constant	2.59*** (0.17)	63.53*** (3.74)	4.08*** (0.14)	2.72*** (0.21)	4.08*** (0.17)	2.16*** (0.35)
Conditions	1.57*** (0.29)	5.53 (6.15)	-0.18 (0.22)	0.29 (0.34)	-0.17 (0.27)	1.32** (0.57)
BPD	0.15*** (0.03)	-0.92 (0.61)	-0.04* (0.02)	0.08** (0.03)	-0.07** (0.03)	0.15*** (0.06)
Interaction	-0.14*** (0.04)	-1.04 (0.96)	0.03 (0.03)	-0.05 (0.05)	0.03 (0.04)	-0.20** (0.09)
Observations	288	287	287	287	287	218
R^2	0.23	0.03	0.01	0.02	0.02	0.04
Adjusted R^2	0.22	0.02	-0.00	0.01	0.01	0.02
Residual Std. Error	0.85	18.13	0.66	1.01	0.81	1.39
F statistic	27.75***	3.23**	0.98	2.13*	2.34*	2.74**

Note: $^{*}p < .05$, $^{**}p < .01$, $^{***}p < 0.001$

Avoidant Attachment towards a Mother Figure

Mother avoidance significantly interacted with conditions in predicting intention to end the relationship, $F(3, 214) = 3.503$, $p = .016$, $R^2 = .05$. A JN analysis revealed that TIM greater predicted leaving intention only among participants at the avoidance score less than 1*SD* (1.80) ($b = 0.57$, $SE = 0.27$, $p = 0.03$). In other words, only women with a low level of avoidant attachments towards a mother figure benefited from the intervention. See Figure 3.

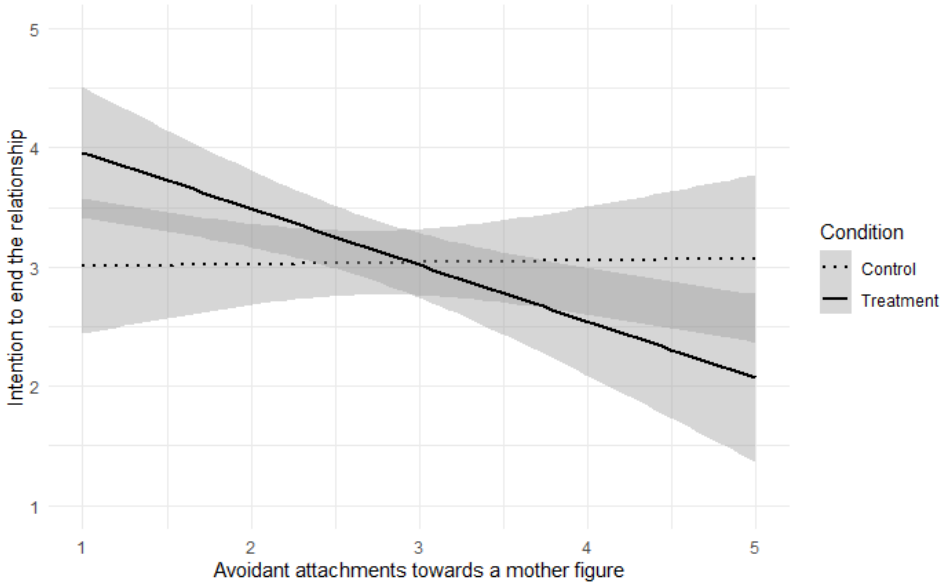

Figure 3. Interaction between conditions and avoidant attachment towards a mother figure in predicting leaving intention.

Avoidant attachment towards a mother figure did not significantly interact with conditions in predicting other outcomes outside of leaving intention. See Table 4 for detailed estimates.

Anxious Attachment towards a Mother Figure

Mother anxious attachment significantly interacted with conditions in predicting trauma knowledge, $F(3, 284) = 20.707$, $p < .001$, $R^2 = .18$. A JN analysis revealed that TIM predicted greater trauma knowledge to control messages among women with the avoidance scores at less than 1*SD* (1.59) ($b = 1.04$, $SE = 0.15$, $p < .001$), the mean (2.84) ($b = 0.75$, $SE = 0.15$, $p < .001$), and more than 1*SD* (4.08) ($b = 0.46$, $SE = 0.15$, $p < .001$). TIM, thus, is significantly effective among women with mother anxious attachment at all levels, although the effectiveness decreased once the attachment scores increased. See Figure 4.

Table 4. F and t-Statistics of Avoidant Attachment towards a Mother Figure as the Moderator.

	Dependent variable:					
	Trauma knowledge	Self-efficacy	Internal tools	Tradeoffs	Social support	**Leaving intention**
Constant	3.57*** (0.22)	64.64*** (4.49)	4.20*** (0.16)	3.62*** (0.25)	4.47*** (0.19)	2.99*** (0.41)
Condition	0.65** (0.32)	-2.10 (6.54)	-0.27 (0.23)	-0.11 (0.36)	-0.28 (0.28)	1.45** (0.59)
Mother avoidance	-0.06 (0.07)	-2.27 (1.52)	-0.12** (0.05)	-0.16* (0.08)	-0.27*** (0.07)	0.02 (0.14)
Interaction	0.04 (0.11)	0.22 (2.23)	0.09 (0.08)	0.05 (0.12)	0.10 (0.10)	-0.49** (0.20)
Observations	288	287	287	287	287	218
R^2	0.16	0.01	0.02	0.02	0.08	0.05
Adjusted R^2	0.15	0.004	0.01	0.01	0.07	0.03
Residual Std. Error	0.88	18.30	0.65	1.02	0.79	1.38
F Statistic	17.66***	1.43	1.58	1.67	7.87***	3.50**

Note: $^{*}p < .05$, $^{**}p < .01$, $^{***}p < 0.001$

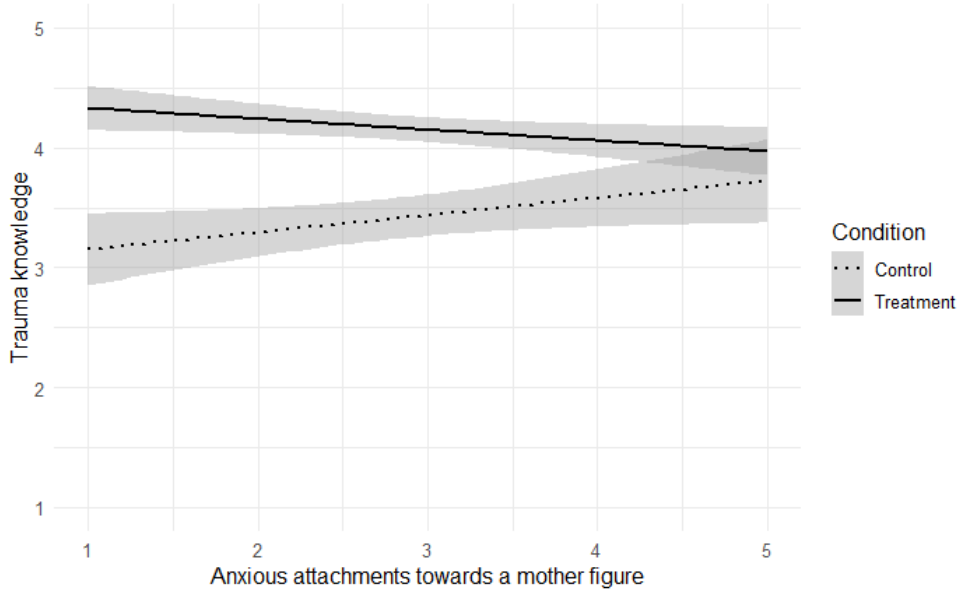

Figure 4. Interaction between conditions and anxious attachment towards a mother figure in predicting trauma knowledge.

Outside of trauma knowledge, anxious attachment towards a mother figure did not significantly interact with conditions in predicting other outcomes. See Table 5 for detailed estimates.

Table 5. F and t-Statistics of Anxious attachment towards a Mother Figure as the Moderator.

	Dependent variable:					
	Trauma knowledge	Self-efficacy	Internal tools	Tradeoffs	Social support	Leaving intention
Constant	3.01*** (0.18)	60.09*** (3.71)	4.09*** (0.13)	2.44*** (0.20)	3.77*** (0.16)	1.72 (0.31)
Condition	1.41*** (0.26)	-5.31 (5.43)	-0.32* (0.19)	0.02 (0.29)	-0.32 (0.24)	0.27 (0.46)
Mother anxiety	0.14** (0.06)	-0.63 (1.22)	-0.08* (0.04)	0.27*** (0.06)	-0.02 (0.05)	0.46*** (0.10)
Interaction	-0.23*** (0.08)	1.35 (1.75)	0.11 (0.06)	-0.01 (0.09)	0.11 (0.08)	-0.08 (0.14)
Observations	288	287	287	287	287	218
R^2	0.18	0.004	0.01	0.10	0.01	0.15
Adjusted R^2	0.17	-0.01	0.003	0.09	-0.001	0.13
Residual Std. Error	0.87	18.40	0.65	0.97	0.81	1.31
F Statistic	20.71***	0.35	1.25	10.87***	0.90	12.10***

Note: $^{*}p < .05$, $^{**}p < .01$, $^{***}p < 0.001$

Anxious Attachment towards a Father Figure

Father anxious attachments significantly interacted with conditions in predicting trauma knowledge, $F(3, 282) = 24.359$, $p < .001$, $R^2 = .21$. According to a JN analysis, TIM greater predicted trauma knowledge relative to control messages among women with the anxious attachment scores at less than1 *SD* (1.52) ($b = 1.14$, $SE = 0.14$, $p < .001$), the mean (2.77) ($b = 0.75$, $SE = 0.10$, $p < .001$), and more than 1*SD* (4.01) ($b = 0.37$, $SE = 0.15$, $p = .01$). Similar to anxious attachments towards a mother figure, TIM is significantly effective among women with father anxious attachment at all levels,

although the effectiveness decreased once the attachment scores increased. See Figure 5 for detailed estimates.

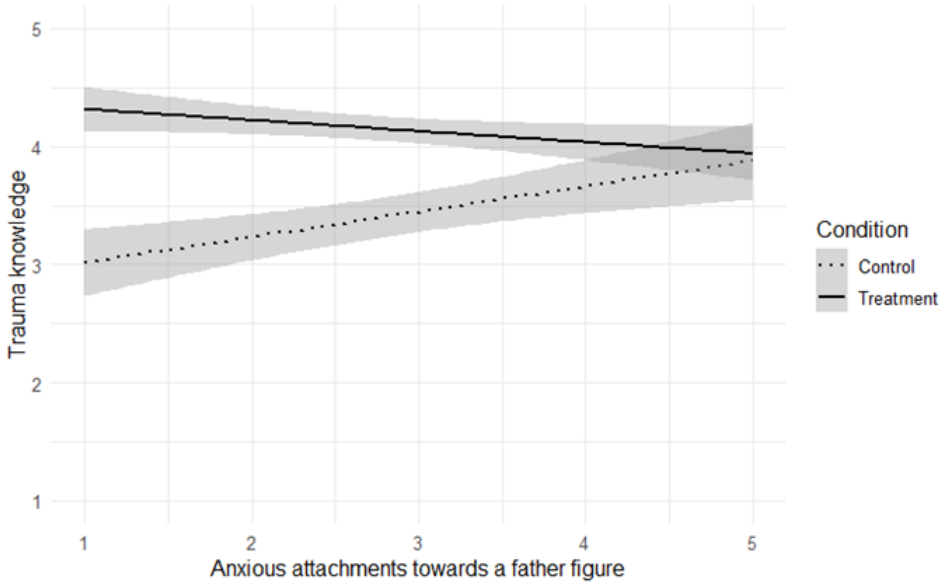

Figure 5. Interaction between anxious attachments towards a father figure and conditions in predicting trauma knowledge.

Outside of trauma knowledge, anxious attachment towards a father figure did not significantly interact with conditions in predicting other outcomes. See Table 6 for detailed estimates.

Table 6. F and t-Statistics of Anxious attachment towards a Father Figure as the Moderator.

	Dependent variable					
	Trauma knowledge	Self-efficacy	Internal tools	Tradeoffs	Social support	Leaving intention
Constant	2.80*** (0.16)	54.32*** (3.53)	4.00*** (0.13)	2.54*** (0.19)	3.69*** (0.16)	2.10*** (0.30)
Condition	1.61*** (0.25)	-0.26 (5.37)	-0.01 (0.19)	-0.24 (0.28)	0.08 (0.24)	-0.21 (0.48)
Father anxiety	0.21*** (0.05)	1.42 (1.14)	-0.04 (0.04)	0.23*** (0.06)	0.01 (0.05)	0.32*** (0.10)

Table 6. (continued).

	Dependent variable					
	Trauma knowledge	Self-efficacy	Internal tools	Tradeoffs	Social support	Leaving intention
Interaction	-0.31*** (0.08)	-0.36 (1.78)	-0.005 (0.06)	0.10 (0.09)	-0.03 (0.08)	0.11 (0.15)
Observations	286	285	285	285	285	216
R^2	0.21	0.01	0.01	0.12	0.001	0.11
Adjusted R^2	0.20	-0.002	-0.003	0.11	-0.01	0.09
Residual Std. Error	0.86	18.40	0.66	0.97	0.82	1.34
F Statistic	24.36***	0.84	0.70	12.18***	0.05	8.47***

Note: $^{*}p < .05$, $^{**}p < .01$, $^{***}p<0.001$

Avoidant Attachment towards a Father Figure

None of the interactions are significant, $p > .05$. See Table 7.

Table 7. F and t-Statistics of Avoidant Attachment towards a Father Figure as the Moderator.

	Dependent variable:					
	Trauma knowledge	Self-efficacy	Internal tools	Tradeoffs	Social support	Leaving intention
Constant	3.47*** (0.22)	57.62*** (4.55)	4.14*** (0.16)	3.57*** (0.25)	4.47*** (0.19)	3.69*** (0.41)
Condition	0.45 (0.32)	2.14 (6.73)	0.05 (0.24)	-0.02 (0.37)	-0.33 (0.29)	0.50 (0.59)
Father avoidance	-0.02 (0.07)	0.23 (1.38)	-0.09* (0.05)	-0.12 (0.08)	-0.24*** (0.06)	-0.21* (0.12)
Interaction	0.09 (0.10)	-1.14 (2.05)	-0.02 (0.07)	0.02 (0.11)	0.10 (0.09)	-0.13 (0.18)
Observations	287	286	286	286	286	217
R^2	0.16	0.003	0.03	0.01	0.07	0.04
Adjusted R^2	0.15	-0.01	0.01	0.004	0.06	0.03
Residual Std. Error	0.88	18.43	0.65	1.02	0.79	1.39
F Statistic	17.46***	0.26	2.42*	1.43	7.22***	3.25**

Note: $^{*}p < .05$, $^{**}p < .01$, $^{***}p<0.001$

In conclusion, H2 a) and b) are supported. TIM is significantly effective relative to control messages even among women with social-communicative inflexibilities such as BPD traits and insecure attachment patterns. The effectiveness, however, decreased once those traits increased.

H3: TIM Effectiveness among Women with Anxious Attachments towards Mother and Father Figures and Women with BPD Symptoms is Larger in Effect Sizes than Among Avoidant Women.

According to the results in H2, the effect sizes (R^2) of TIM range from .04 - .23 among women with anxious attachments towards mother and father figures and women with BPD symptoms and is .05 among women with avoidant attachment towards a mother figure. Thus, H3 is supported.

RQ1: Is TIM Effectiveness Moderated by Information Processing Patterns (i.e., Experiential and Cognitive) in addition to Trauma-Driven Traits (i.e., BPD and Insecure Attachments)?

Cognitive Thinking Tendencies (i.e., Needs for Cognition: NFC) as the Second Moderator

Borderline personality disorder (BPD) traits as the first moderator. No significant three-way interactions were found when BPD was used as the first moderator. See Table 8 for detailed estimates.

Avoidant attachment towards a mother figure as the first moderator. The three-way interaction significantly predicted intention to end the relationship, $F(7, 210) = 3.868$, $p < .001$, $R^2 = .11$. A JN interval analysis of the three-way interaction revealed that

TIM predicted greater leaving intention relative to control messages when avoidance scores are at the mean (2.72) (b = 0.51, SE = 0.27, p = .06) and less than 1 SD (1.80) and

Table 8. F and t-Statistics of Cognitive Thinking Tendencies and BPD traits as the Moderators.

	Dependent variable:					
	Trauma knowledge	Self-efficacy	Internal tools	Tradeoffs	Social support	Leaving intention
Constant	2.61***	33.32*	2.90***	3.94***	3.78***	3.94***
	(0.80)	(16.93)	(0.61)	(0.94)	(0.76)	(1.43)
Conditions	1.53	19.09	0.26	0.68	-0.56	-0.33
	(1.20)	(25.38)	(0.91)	(1.41)	(1.14)	(2.13)
NFC	-0.01	9.10*	0.34*	-0.34	0.08	-0.51
	(0.23)	(4.88)	(0.18)	(0.27)	(0.22)	(0.42)
BPD	0.11	5.45*	0.08	0.06	-0.10	0.07
	(0.13)	(2.84)	(0.10)	(0.16)	(0.13)	(0.25)
Condition*BPD	-0.12	-6.27	-0.07	-0.16	0.24	-0.02
	(0.19)	(4.11)	(0.15)	(0.23)	(0.18)	(0.36)
NFC*BPD	0.01	-1.96**	-0.03	0.003	0.01	0.02
	(0.04)	(0.84)	(0.03)	(0.05)	(0.04)	(0.08)
Condition*NFC	0.02	-4.01	-0.12	-0.15	0.14	0.47
	(0.35)	(7.46)	(0.27)	(0.41)	(0.33)	(0.64)
Condition*NFC*BPD	-0.01	1.62	0.03	0.04	-0.07	-0.05
	(0.06)	(1.23)	(0.04)	(0.07)	(0.06)	(0.11)
Observations	288	287	287	287	287	218
R^2	0.23	0.06	0.06	0.07	0.04	0.07
Adjusted R^2	0.21	0.04	0.03	0.05	0.02	0.04
Residual Std. Error	0.85	18.00	0.64	1.00	0.81	1.38
F Statistic	11.81***	2.55**	2.44**	2.95***	1.81*	2.23**

Note: $^{*}p < .05$, $^{**}p < .01$, $^{***}p<0.001$

cognitive thinking scores at more than 1SD (3.92) (b = 1.18, SE = 0.37, $p < .001$). In other words, TIM effectiveness in predicting leaving intention existed among low to average avoidant women with high cognitive thinking tendencies. See Figure 6 for the interaction visual and Figure 7 for the JN visual.

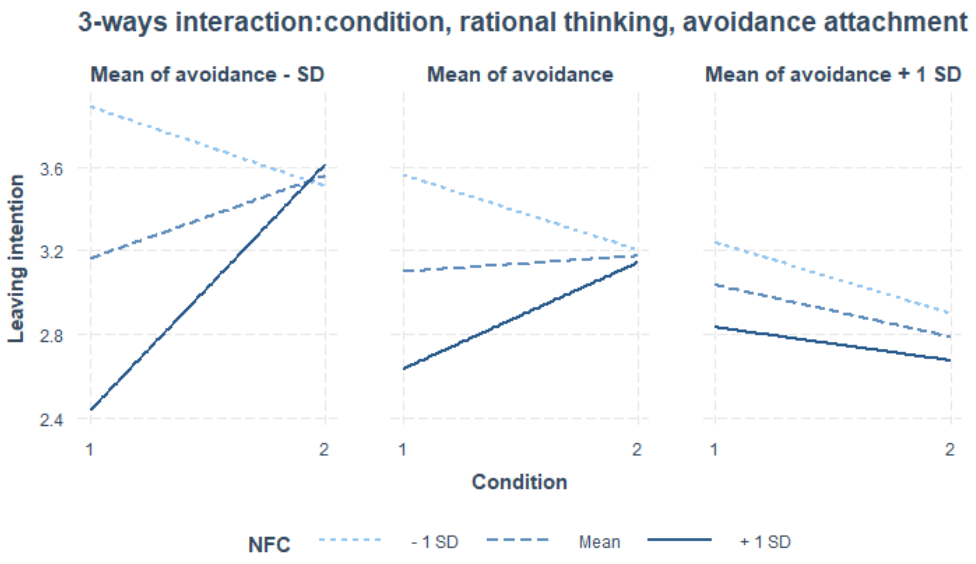

Figure 6. The three-way interaction between conditions, cognitive thinking tendencies (i.e., NFC), and avoidant attachments towards a mother figure in predicting leaving intention (1 represents control messages, and 2 represents trauma-informed messages).

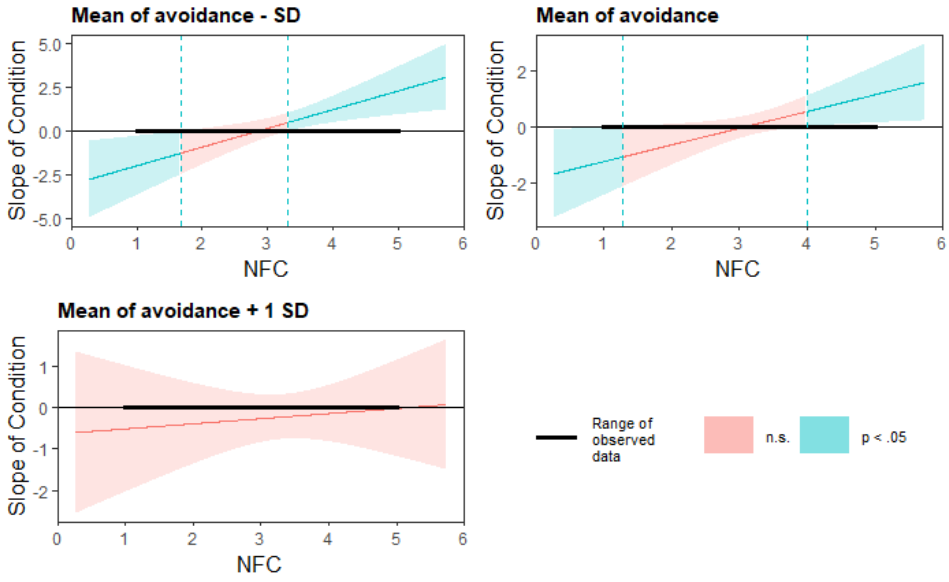

Figure 7. The JN analysis of the three-way interaction between conditions, cognitive thinking tendencies, and avoidant attachments towards a mother figure in predicting leaving intention.

Except leaving intention, the three-way interaction effect did not significantly predict other outcome variables. See Table 9 for detailed estimates.

Table 9. F and t-Statistics of Cognitive Thinking Tendencies and Avoidant Attachment towards a Mother Figure as the Moderators.

	Dependent variable:					
	Trauma knowledge	Self-efficacy	Internal tools	Tradeoffs	Social support	**Leaving intention**
Constant	5.49*** (0.92)	82.10*** (18.78)	5.34*** (0.66)	4.29*** (1.03)	6.08*** (0.80)	8.73*** (1.66)
Condition	-1.24 (1.32)	19.77 (27.08)	-0.89 (0.94)	0.85 (1.49)	-0.45 (1.16)	-5.37** (2.45)
NFC	-0.58** (0.27)	-5.28 (5.53)	-0.36* (0.19)	-0.19 (0.30)	-0.50** (0.24)	-1.70*** (0.49)
Avoidance	-0.64** (0.28)	-7.01 (5.74)	-0.68*** (0.20)	0.03 (0.32)	-0.96*** (0.24)	-1.32*** (0.50)
Condition* avoidance	0.58 (0.42)	-12.66 (8.56)	0.24 (0.30)	-0.43 (0.47)	0.37 (0.37)	1.30 (0.81)
NFC*avoidance	0.18** (0.08)	1.44 (1.70)	0.18*** (0.06)	-0.07 (0.09)	0.21*** (0.07)	0.39*** (0.15)
Condition*NFC	0.58 (0.39)	-6.08 (7.97)	0.22 (0.28)	-0.33 (0.44)	0.06 (0.34)	2.00*** (0.72)
Condition*NFC* avoidance	-0.17 (0.12)	3.70 (2.49)	-0.06 (0.09)	0.16 (0.14)	-0.09 (0.11)	-0.52*** (0.23)
Observations	288	287	287	287	287	218
R^2	0.17	0.05	0.10	0.08	0.12	0.11
Adjusted R^2	0.15	0.03	0.08	0.05	0.10	0.08
Residual Std. Error	0.88	18.06	0.63	0.99	0.77	1.35
F Statistic	8.29***	2.31**	4.53***	3.31***	5.69***	3.87***

Note: $^{*}p < .05$, $^{**}p < .01$, $^{***}p<0.001$

Anxious attachment towards a mother figure as the first moderator. The three-way interaction significantly predicted intention to end the relationship. See Table 10 for detailed estimates. A JN interval analysis reveals no significant effects at all three levels of cognitive thinking tendencies and anxious attachment scores (-1*SD*, mean, and 1*SD*). However, a JN spotlight analysis indicated that the two-way interactions between TIM and NFC are significant at anxious attachment scores less than 1 (b = .77, SE = .40,

$p < .05$), which are more statistical than practical. Thus, cognitive women with anxious attachments towards a mother figure did not benefit from the intervention. See Figure 8 for the interaction analysis and Figure 9 for the JN visual.

Table 10. F and t-Statistics of Cognitive Thinking Tendencies and Anxious attachment towards a Mother Figure as the Moderators.

	Dependent variable:					
	Trauma knowledge	Self-efficacy	Internal tools	Tradeoffs	Social support	**Leaving intention**
Constant	1.36*	33.02**	2.79***	2.43***	2.36***	2.99**
	(0.78)	(16.35)	(0.57)	(0.85)	(0.72)	(1.31)
Condition	2.75**	8.84	-0.37	1.15	1.49	-3.57*
	(1.10)	(23.15)	(0.81)	(1.21)	(1.03)	(1.87)
NFC	0.49**	8.14*	0.38**	0.02	0.41**	-0.36
	(0.22)	(4.71)	(0.16)	(0.25)	(0.21)	(0.38)
Anxiety	0.70***	9.54*	0.18	0.60**	0.26	0.40
	(0.24)	(4.99)	(0.17)	(0.26)	(0.22)	(0.40)
Condition*anxiety	-0.67*	-8.35	0.10	-0.53	-0.24	1.16*
	(0.35)	(7.37)	(0.26)	(0.39)	(0.33)	(0.59)
NFC*anxiety	-0.17**	-3.11**	-0.07	-0.11	-0.08	0.01
	(0.07)	(1.47)	(0.05)	(0.08)	(0.07)	(0.12)
Condition*NFC	-0.40	-4.39	0.02	-0.35	-0.53*	1.14**
	(0.32)	(6.69)	(0.23)	(0.35)	(0.30)	(0.55)
Condition*NFC*anxiety	0.13	3.07	0.003	0.16	0.10	-0.37**
	(0.10)	(2.19)	(0.08)	(0.11)	(0.10)	(0.18)
Observations	288	287	287	287	287	218
R^2	0.20	0.03	0.07	0.14	0.03	0.19
Adjusted R^2	0.18	0.01	0.05	0.12	0.01	0.17
Residual Std. Error	0.87	18.30	0.64	0.96	0.81	1.28
F Statistic	9.80***	1.21	3.03***	6.70***	1.25	7.25***

Note: $^{*}p < .05$, $^{**}p < .01$, $^{***}p<0.001$

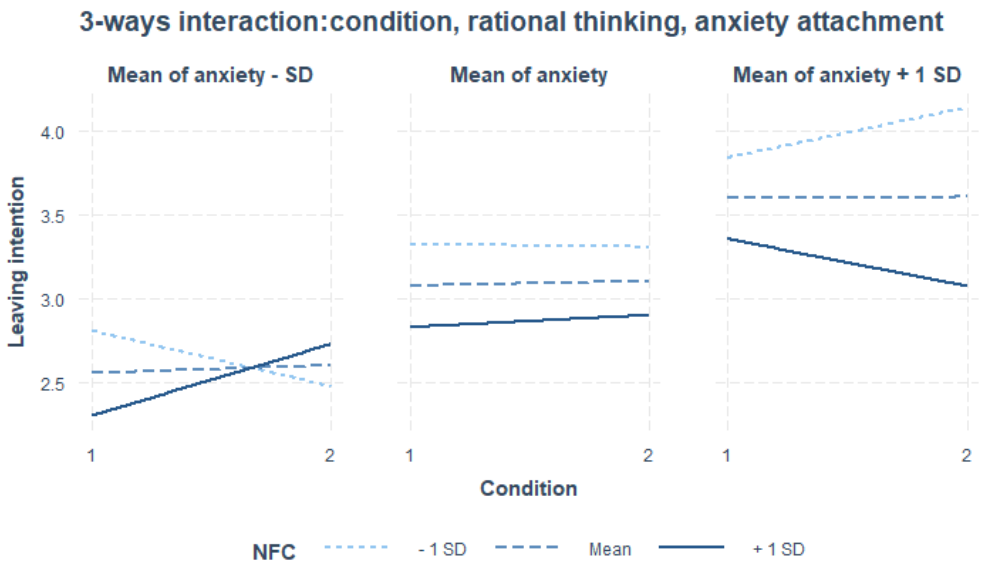

Figure 8. The three-way interaction between conditions, cognitive thinking tendencies (NFC), and anxious attachment towards a mother figure in predicting leaving intention (1 represents control messages, and 2 represents trauma-informed messages).

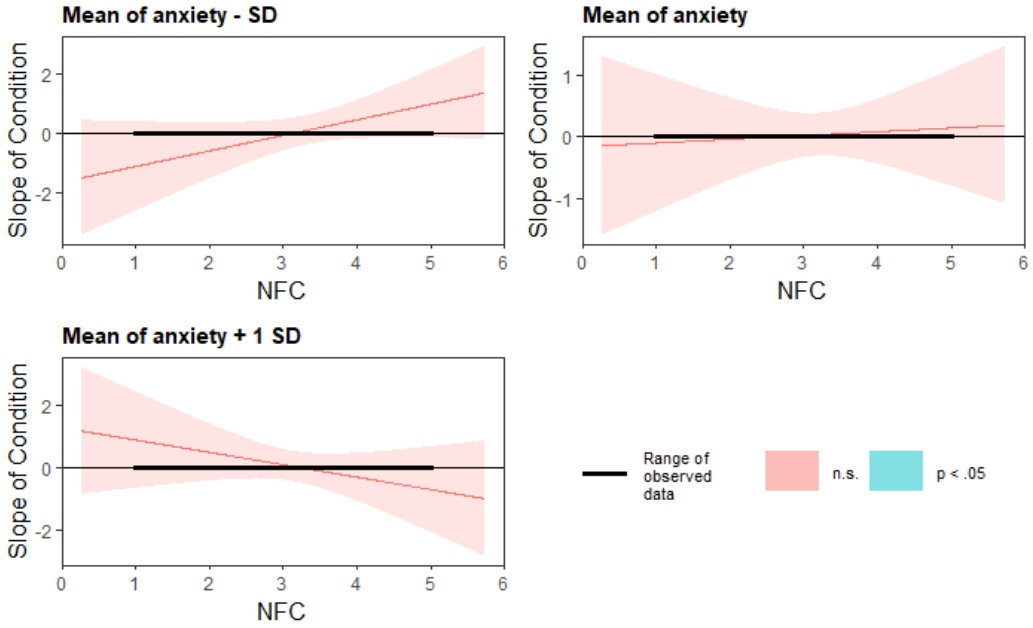

Figure 9. The three-way interaction between conditions, cognitive thinking tendencies, and anxious attachment towards a mother figure in predicting leaving intention.

Avoidant attachment towards a father figure as the first moderator. The three-way interaction significantly predicted perceived internal tools, $F(7, 278) = 4.789$, $p < .001$, $R^2 = .11$. TIM greater predicted perceived internal tools relative to control messages among women with cognitive thinking scores less than 1*SD* (2.50) and avoidance scores less than 1*SD* (2.03) ($b = 0.27$, $SE = 0.16$, $p = .09$). In other words, TIM effectiveness in predicting perceived internal tools as an empowerment aspect existed among women with low avoidant scores and low cognitive thinking tendencies. See Figure 10 for the interaction visual and Figure 11 for the JN results.

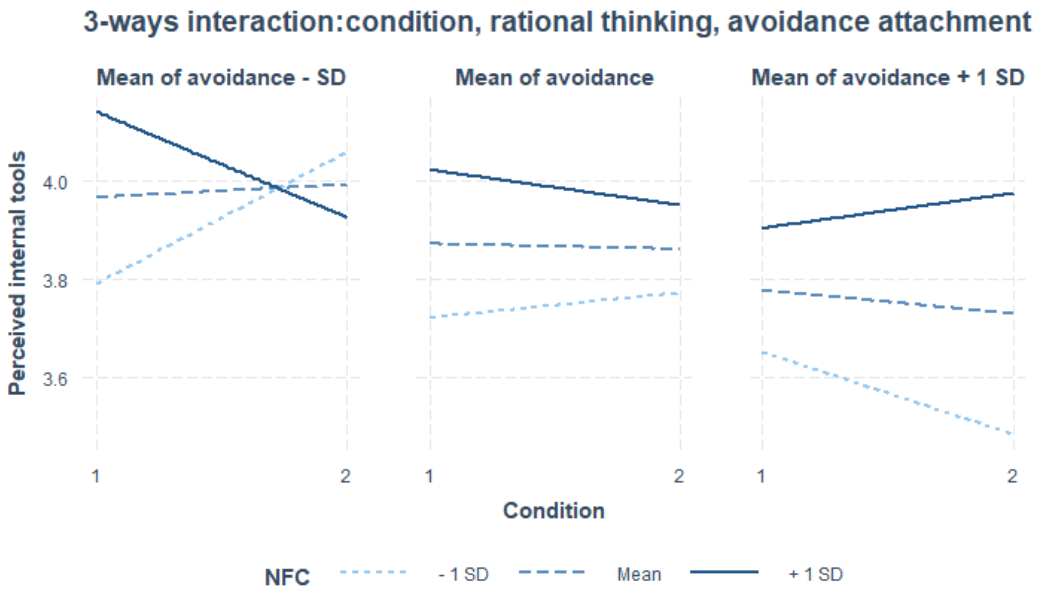

Figure 10. The three-way interaction between conditions, cognitive thinking tendencies, and avoidant attachment towards a father figure in predicting perceived internal tools (1 represents control messages, and 2 represents trauma-informed messages).

In addition to perceived internal tools, the three-way interaction significantly predicted perceived social support, $F(7, 278) = 5.894$, $p < .001$, $R^2 = .13$. A JN interval analysis revealed that TIM greater predicted social support than control messages when

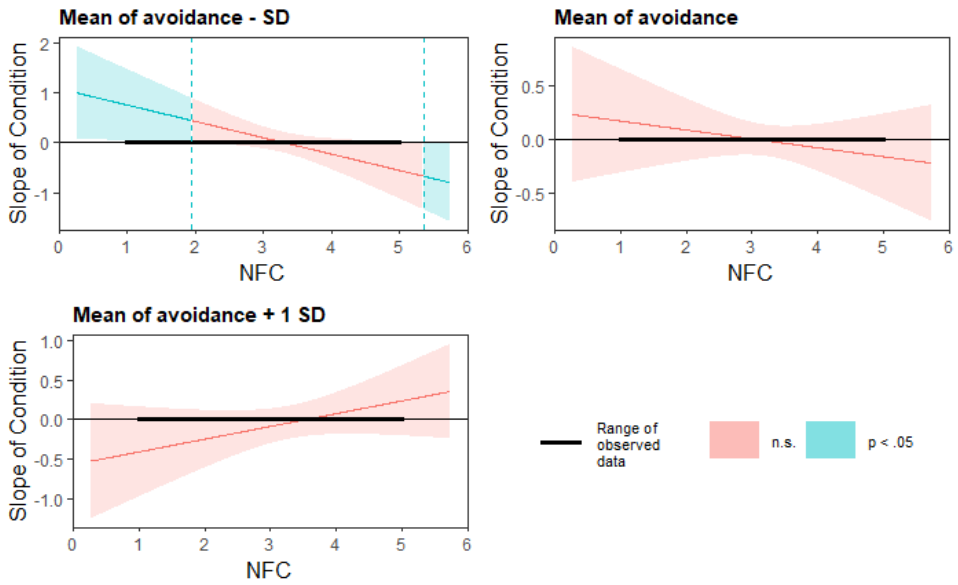

Figure 11. The JN analysis of the three-way interaction between conditions, cognitive thinking tendencies, and avoidant attachment towards a father figure in predicting perceived internal tools.

avoidance scores are less than 1 *SD* (2.03) and cognitive thinking scores are less than 1 *SD* (2.50) (*b* = 0.34, *SE* = 0.19, *p* = 0.08), and when avoidance scores are average (3.10) and cognitive thinking scores are less than 1 *SD* (2.50), (*b* = 0.28, *SE* = 0.13, *p* = 0.03). Therefore, TIM effectiveness in predicting perceived social support as an empowerment aspect existed among women with low to average avoidant scores and low cognitive thinking tendencies. See Figure 12 for the interaction visual and Figure 13 for the JN visual.

See Table 11 for F and t-statistics of the interactions between conditions, cognitive thinking tendencies, and avoidant attachments towards a father figure.

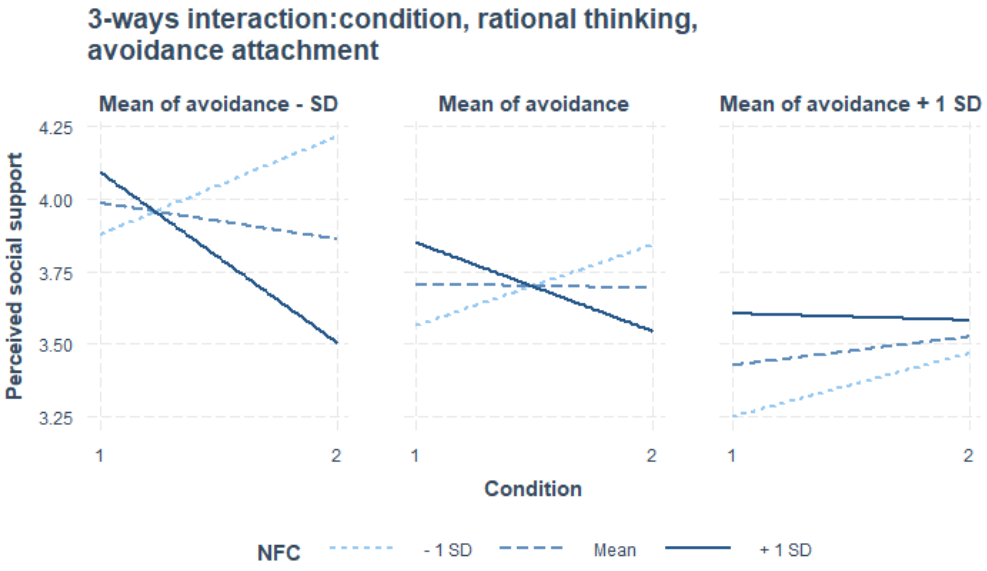

Figure 12. The three-way interaction between conditions, avoidant attachments towards a father figure, and cognitive thinking tendencies in predicting perceived social support (1 represents control messages, and 2 represents trauma-informed messages).

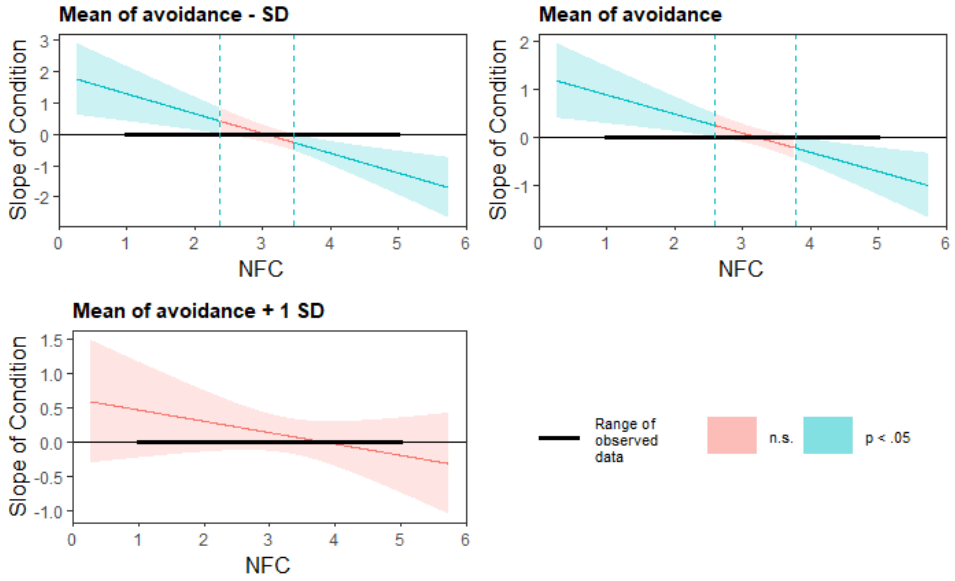

Figure 13. The JN of the three-way interaction between conditions, avoidant attachments towards a father figure, and cognitive thinking tendencies in predicting perceived social support.

Table 11. F and t-statistics of Cognitive Thinking Tendencies and Avoidant Attachment towards a Father Figure as the Moderators.

	Dependent variable:					
	Trauma knowledge	Self-efficacy	**Internal tools**	Tradeoffs	**Social support**	Leaving intention
Constant	3.42***	75.97***	3.17***	7.07***	4.34***	6.71***
	(0.88)	(17.94)	(0.62)	(0.98)	(0.76)	(1.48)
Condition	-0.16	40.88	2.67***	-2.38	3.12**	2.05
	(1.43)	(29.19)	(1.01)	(1.59)	(1.24)	(2.50)
NFC	0.01	-5.45	0.30*	-1.06***	0.05	-0.94**
	(0.25)	(5.17)	(0.18)	(0.28)	(0.22)	(0.44)
Avoidance	0.02	-4.63	0.01	-0.83***	-0.41*	-0.65
	(0.25)	(5.08)	(0.18)	(0.28)	(0.22)	(0.41)
Condition*avoidance	0.22	-15.61*	-0.78***	0.63	-0.60*	-0.80
	(0.40)	(8.08)	(0.28)	(0.44)	(0.34)	(0.69)
NFC*avoidance	-0.01	1.42	-0.03	0.21***	0.04	0.14
	(0.07)	(1.43)	(0.05)	(0.08)	(0.06)	(0.12)
Condition*NFC	0.19	-11.85	-0.80***	0.70	-1.07***	-0.45
	(0.42)	(8.61)	(0.30)	(0.47)	(0.37)	(0.74)
Condition*NFC*avoidance	-0.04	4.43*	0.23***	-0.18	0.22**	0.20
	(0.11)	(2.34)	(0.08)	(0.13)	(0.10)	(0.20)
Observations	287	286	286	286	286	217
R^2	0.16	0.05	0.11	0.09	0.13	0.11
Adjusted R^2	0.14	0.03	0.09	0.07	0.11	0.08
Residual Std. Error	0.89	18.13	0.63	0.99	0.77	1.35
F Statistic	7.46***	2.06**	4.79***	3.90***	5.90***	3.57***

Note: $^{*}p < .05$, $^{**}p < .01$, $^{***}p<0.001$

Anxious attachment towards a father figure as the first moderator. No significant 3-ways interactions are found, $p > .05$. See Table 12.

Table 12. F and t-Statistics of Cognitive Thinking Tendencies and Anxious attachment towards a Father Figure as the Moderators.

	Dependent variable:					
	Trauma knowledge	Self-efficacy	Internal tools	Tradeoffs	Social support	Leaving intention
Constant	1.09 (0.68)	44.06*** (14.65)	2.58*** (0.51)	3.51*** (0.76)	1.94*** (0.64)	2.13* (1.20)
Condition	2.56** (1.12)	4.21 (24.28)	1.01 (0.85)	-0.63 (1.26)	3.23*** (1.07)	1.17 (2.14)
NFC	0.50*** (0.19)	3.02 (4.20)	0.42*** (0.15)	-0.29 (0.22)	0.52*** (0.18)	-0.02 (0.35)
Anxiety	0.84*** (0.22)	5.74 (4.66)	0.25 (0.16)	0.28 (0.24)	0.42** (0.21)	0.87** (0.39)
Condition*anxiety	-0.67* (0.36)	-6.71 (7.84)	-0.38 (0.27)	0.07 (0.41)	-0.83** (0.34)	-0.74 (0.66)
NFC*anxiety	-0.19*** (0.06)	-1.29 (1.34)	-0.09* (0.05)	-0.02 (0.07)	-0.12** (0.06)	-0.17 (0.11)
Condition*NFC	-0.27 (0.33)	-1.36 (7.09)	-0.30 (0.25)	0.12 (0.37)	-0.94*** (0.31)	-0.40 (0.63)
Condition*NFC*anxiety	0.11 (0.11)	1.99 (2.31)	0.12 (0.08)	0.01 (0.12)	0.24 (0.10)	0.26 (0.20)
Observations	286	285	285	285	285	216
R^2	0.23	0.02	0.06	0.16	0.04	0.15
Adjusted R^2	0.21	-0.002	0.04	0.14	0.02	0.12
Residual Std. Error	0.85	18.41	0.64	0.95	0.81	1.32
F Statistic	12.07***	0.90	2.74***	7.34***	1.66	5.36***

Note: $^{*}p < .05$, $^{**}p < .01$, $^{***}p<0.001$

Experiential thinking tendencies (i.e., faith in intuition: FI) as the second moderator

BPD traits as the first moderator. No significant relationships are found when BPD is used as the first moderator. See Table 13 for detailed estimates.

Table 13. F and t-Statistics of Experiential Thinking Tendencies and Borderline Personality Disorder Traits as the Moderators.

	Dependent variable:					
	Trauma knowledge	Self-efficacy	Internal tools	Tradeoffs	Social support	Leaving intention
Constant	3.34*** (0.91)	72.55*** (19.75)	3.59*** (0.67)	2.93*** (1.12)	3.96*** (0.87)	3.66** (1.81)
Condition	0.90 (1.89)	-8.91 (40.84)	-0.51 (1.38)	1.20 (2.31)	-1.23 (1.79)	0.07 (3.53)
FI	-0.19 (0.24)	-2.33 (5.14)	0.14 (0.17)	-0.06 (0.29)	0.04 (0.23)	-0.40 (0.47)
BPD	-0.07 (0.15)	-3.64 (3.30)	-0.20* (0.11)	0.03 (0.19)	-0.19 (0.15)	-0.04 (0.30)
Condition*BPD	-0.13 (0.29)	-0.47 (6.32)	0.13 (0.21)	-0.12 (0.36)	0.18 (0.28)	-0.08 (0.55)
FI*BPD	0.06 (0.04)	0.70 (0.85)	0.04 (0.03)	0.01 (0.05)	0.03 (0.04)	0.05 (0.08)
Condition*FI	0.19 (0.48)	3.96 (10.50)	0.09 (0.36)	-0.24 (0.59)	0.28 (0.46)	0.34 (0.91)
Condition*FI*BPD	-0.01 (0.07)	-0.18 (1.61)	-0.03 (0.05)	0.02 (0.09)	-0.04 (0.07)	-0.03 (0.14)
Observations	288	287	287	287	287	218
R^2	0.26	0.05	0.15	0.02	0.07	0.04
Adjusted R^2	0.24	0.03	0.13	0.001	0.05	0.01
Residual Std. Error	0.83	18.07	0.61	1.02	0.79	1.40
F Statistic	14.02***	2.25**	7.13***	1.02	3.01***	1.28

Note: $^{*}p < .05$, $^{**}p < .01$, $^{***}p<0.001$

Anxious attachment towards a mother figure as the first moderator. The three-way interaction significantly predicted trauma knowledge, $F(7, 280) = 11.482$, $p < .001$, $R^2 = .22$, and perceived tradeoffs, $F(7, 279) = 5.712$, $p < .001$, $R^2 = .13$. See Table 14.

Table 14. F and t-Statistics of Experiential Thinking Tendencies and Anxious Attachment towards a Mother Figure the Moderators.

	Dependent variable:					
	Trauma knowledge	Self-efficacy	Internal tools	**Tradeoffs**	Social support	Leaving intention
Constant	1.10 (0.99)	15.84 (21.09)	3.92*** (0.71)	0.98 (1.12)	4.59*** (0.92)	2.14 (1.79)
Condition	4.05*** (1.53)	42.01 (32.68)	-1.49 (1.10)	4.47** (1.73)	-2.40* (1.43)	2.96 (2.85)
FI	0.49* (0.25)	11.43** (5.37)	0.05 (0.18)	0.38 (0.28)	-0.21 (0.23)	-0.11 (0.46)
Anxious	0.60* (0.31)	12.97* (6.70)	-0.48** (0.22)	0.71** (0.36)	-0.56* (0.29)	0.44 (0.58)
Condition*anxiety	-1.28*** (0.46)	-18.76* (9.88)	0.54 (0.33)	-1.27** (0.52)	0.72* (0.43)	-0.99 (0.85)
FI*anxiety	-0.12 (0.08)	-3.51** (1.70)	0.11* (0.06)	-0.11 (0.09)	0.14* (0.07)	0.01 (0.15)
Condition*FI	-0.68* (0.39)	-12.21 (8.35)	0.30 (0.28)	-1.15*** (0.44)	0.54 (0.37)	-0.69 (0.73)
Condition*FI*anxiety	0.27** (0.12)	5.20 (2.52)	-0.11 (0.08)	0.33*** (0.13)	-0.16 (0.11)	0.23 (0.22)
Observations	288	287	287	287	287	218
R^2	0.22	0.04	0.15	0.13	0.06	0.16
Adjusted R^2	0.20	0.01	0.13	0.10	0.04	0.13
Residual Std. Error	0.86	18.23	0.61	0.97	0.80	1.31
F Statistic	11.48***	1.49	7.14***	5.71***	2.61**	5.52***

Note: $^{*}p < .05$, $^{**}p < .01$, $^{***}p<0.001$

Regarding trauma knowledge, TIM greater predicted the outcome relative to control messages when the level of anxious attachments towards a mother figure is less than 1 *SD* (1.59) and at any level of experiential thinking tendencies: low (3.13) (b = 1.23, SE = 0.22, $p < .001$), average (3.81) (b = 1.06, SE = 0.14, $p < .001$), and high (4.49) (b = 0.89, SE = 0.21, $p < .001$). The three way interaction with greater effectiveness of TIM is also significant when the level of anxious attachment is average (2.84) and at any

level of experiential thinking tendencies: low (3.13) (b = 0.69, SE = 0.15, p < .001), average (0.75) (b = 0.75, SE = 0.10, p < .001), high (4.49) (b = 0.81, SE = 0.14, p < .001), and when the level of anxious attachment is high (4.08) and the level of experiential thinking tendencies is average (3.81) (b = 0.44, SE = 0.14, p < .001) and high (4.49) (b = 0.73, SE = 0.19, p < .001). See Figure 14 for the interaction visual and Figure 15 for the JN analysis. In other words, TIM effectiveness in predicting trauma knowledge existed among women with anxious attachment scores towards a mother figure and experiential thinking tendencies at all levels.

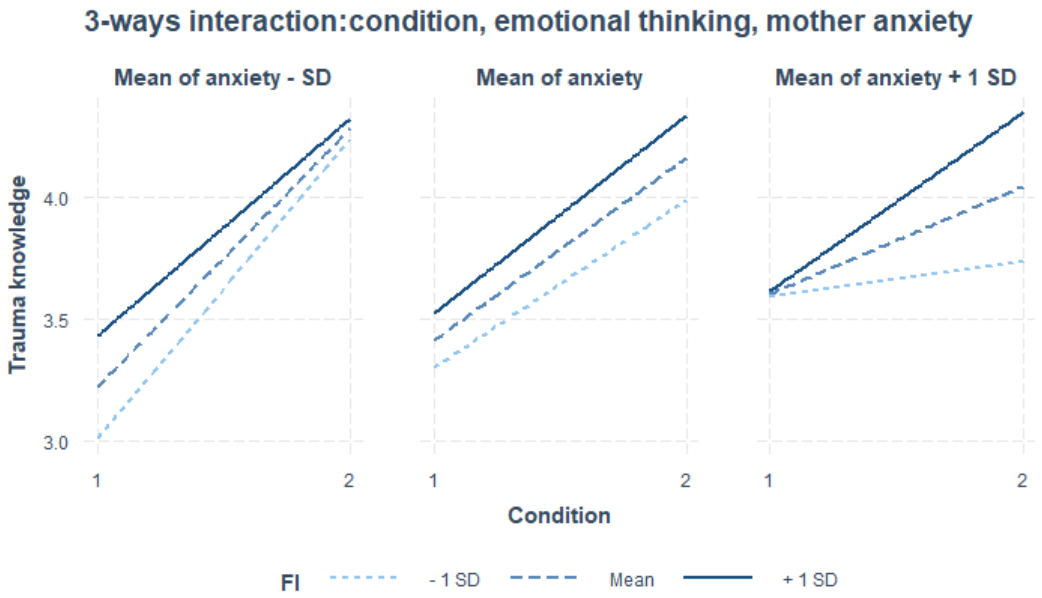

Figure 14. The three-way interaction between conditions, experiential thinking tendencies, and anxious attachment towards a mother figure in predicting trauma knowledge (1 represents control messages, and 2 represents trauma-informed messages).

Regarding perceived tradeoffs, a JN analysis shows that the interaction between conditions and experiential thinking tendencies is significant among women with anxious attachment scores less than 1 *SD* (1.59) and experiential thinking scores less than 1 *SD* (3.12) at about 2.80 (b = -0.36, SE = 0.17, p = 0.04). See Figure 16 for the interaction

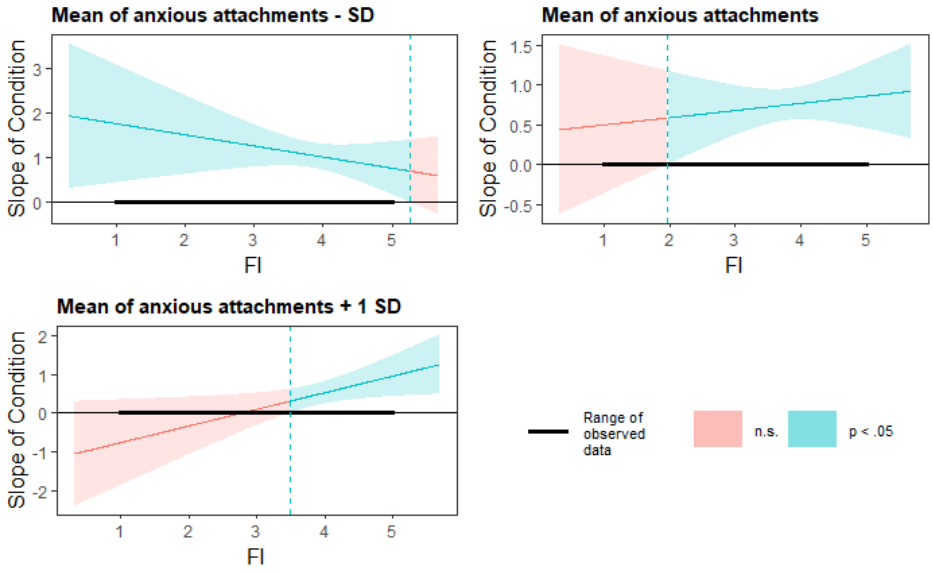

Figure 15. The JN of the three-way interaction between conditions, experiential thinking tendencies, and anxious attachment towards a mother figure in predicting trauma knowledge.

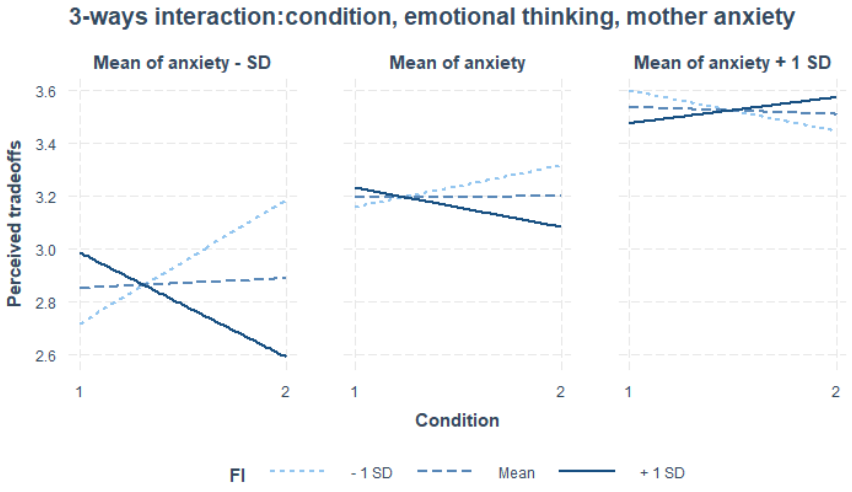

Figure 16. The three-way interaction between conditions, anxious attachment to a mother figure, and experiential thinking tendencies in predicting perceived tradeoffs (1 represents control messages, and 2 represents trauma-informed messages).

visual and Figure 17 for the JN visual. TIM effectiveness in predicting lower perceived tradeoffs relative to control messages, therefore, existed among women with a low level of anxious attachments towards a mother figure and experiential thinking tendencies at all levels.

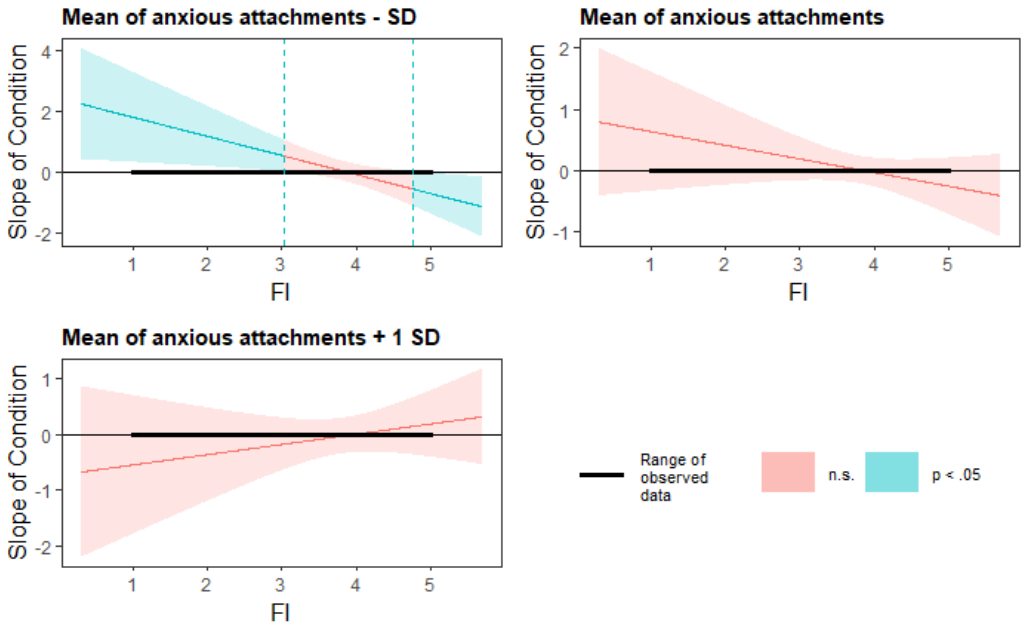

Figure 17. The JN of the three-way interaction between conditions, anxious attachments towards a mother figure, and experiential thinking tendencies in predicting perceived tradeoffs.

Outside of the trauma knowledge and perceived tradeoffs, the three-ways interaction did not significantly predict other outcomes.

Avoidant attachment towards a mother figure as the first moderator. Non-significant results are found, $p > .05$. See Table 15 for detailed estimates.

Avoidant attachment towards a father figure as the first moderator. No significant three-way interactions are found, $p < .05$. See Table 16 for detailed estimates.

Anxious attachment towards a father figure as the first moderator. No significant three-way interaction effects are found, $p < .05$. See Table 17.

Table 15. F and t-Statistics of Experiential Thinking Tendencies and Avoidant Attachment towards a Mother Figure the Moderators.

	Dependent variable:					
	Trauma knowledge	Self-efficacy	Internal tools	Tradeoffs	Social support	Leaving intention
Constant	1.62 (1.26)	49.53* (26.43)	3.26*** (0.89)	1.86 (1.47)	4.36*** (1.12)	-0.86 (2.59)
Condition	2.44 (1.82)	-4.79 (38.25)	-0.77 (1.28)	2.43 (2.13)	-1.89 (1.62)	6.51* (3.51)
FI	0.50 (0.32)	3.86 (6.63)	0.24 (0.22)	0.45 (0.37)	0.03 (0.28)	0.96 (0.64)
Avoidance	0.42 (0.41)	1.35 (8.69)	-0.26 (0.29)	0.42 (0.48)	-0.49 (0.37)	1.58* (0.91)
Condition*avoidance	-0.76 (0.57)	-3.07 (11.92)	0.29 (0.40)	-0.63 (0.66)	0.55 (0.50)	-2.33** (1.14)
FI*Avoidance	-0.12 (0.10)	-0.91 (2.17)	0.04 (0.07)	-0.15 (0.12)	0.05 (0.09)	-0.39* (0.23)
Condition*FI	-0.47 (0.46)	0.60 (9.69)	0.12 (0.33)	-0.64 (0.54)	0.41 (0.41)	-1.27 (0.88)
Condition*FI*avoidance	0.21 (0.14)	0.90 (3.02)	-0.05 (0.10)	0.17 (0.17)	-0.11 (0.13)	0.46 (0.29)
Observations	288	287	287	287	287	218
R^2	0.19	0.03	0.14	0.03	0.11	0.06
Adjusted R^2	0.17	0.004	0.12	0.001	0.09	0.03
Residual Std. Error	0.87	18.30	0.61	1.02	0.77	1.38
F Statistic	9.47***	1.18	6.74***	1.03	5.13***	2.01*

Note: $^{*}p < .05$, $^{**}p < .01$, $^{***}p<0.001$

Table 16. F and t-Statistics of Experiential Thinking Tendencies and Avoidant Attachment towards a Father Figure the Moderators.

	Dependent variable:					
	Trauma knowledge	Self-efficacy	Internal tools	Tradeoffs	Social support	Leaving intention
Constant	3.15**	103.81***	3.06***	2.43	3.40***	4.09
	(1.38)	(28.80)	(0.97)	(1.62)	(1.23)	(2.81)
Condition	-0.89	-15.03	-0.25	0.80	0.17	2.37
	(1.93)	(40.30)	(1.35)	(2.26)	(1.72)	(3.68)
FI	0.09	-11.45	0.29	0.29	0.28	-0.11
	(0.34)	(7.15)	(0.24)	(0.40)	(0.30)	(0.70)
Avoidance	-0.10	-15.47*	-0.18	0.18	-0.16	-0.24
	(0.41)	(8.50)	(0.29)	(0.48)	(0.36)	(0.87)
Condition*avoidance	0.29	0.67	0.13	-0.06	-0.10	-0.70
	(0.56)	(11.65)	(0.39)	(0.65)	(0.50)	(1.09)
FI*avoidance	0.02	3.90*	0.02	-0.08	-0.02	0.01
	(0.10)	(2.09)	(0.07)	(0.12)	(0.09)	(0.21)
Condition*FI	0.32	3.92	0.05	-0.20	-0.14	-0.47
	(0.48)	(10.04)	(0.34)	(0.56)	(0.43)	(0.91)
Condition*FI*avoidance	-0.04	-0.26	-0.03	0.02	0.06	0.14
	(0.14)	(2.89)	(0.10)	(0.16)	(0.12)	(0.27)
Observations	287	286	286	286	286	217
R^2	0.19	0.04	0.15	0.02	0.11	0.05
Adjusted R^2	0.17	0.02	0.13	-0.004	0.09	0.02
Residual Std. Error	0.87	18.21	0.61	1.02	0.78	1.40
F Statistic	9.19***	1.66	7.11***	0.83	4.91***	1.53

Note: $^{*}p < .05$, $^{**}p < .01$, $^{***}p<0.001$

Table 17. F and t-Statistics of Experiential Thinking Tendencies and Anxious Attachments towards a Father Figure the Moderators.

	Dependent variable:					
	Trauma knowledge	Self-efficacy	Internal tools	Tradeoffs	Social support	Leaving intention
Constant	2.36** (0.92)	45.68** (19.71)	3.83*** (0.66)	2.26** (1.05)	4.26*** (0.87)	2.89* (1.71)
Condition	1.76 (1.47)	24.96 (31.54)	-1.07 (1.06)	1.69 (1.68)	-1.79 (1.39)	2.03 (2.82)
FI	0.12 (0.23)	2.25 (5.02)	0.05 (0.17)	0.07 (0.27)	-0.15 (0.22)	-0.21 (0.44)
Anxiety	0.17 (0.30)	2.67 (6.35)	-0.47** (0.21)	0.28 (0.34)	-0.47* (0.28)	0.22 (0.59)
Condition*anxiety	-0.54 (0.46)	-14.20 (9.98)	0.41 (0.34)	-0.56 (0.53)	0.52 (0.44)	-1.03 (0.89)
FI*anxiety	0.01 (0.08)	-0.32 (1.61)	0.11** (0.05)	-0.01 (0.09)	0.12* (0.07)	0.03 (0.15)
Condition*FI	-0.06 (0.37)	-6.87 (7.94)	0.24 (0.27)	-0.50 (0.42)	0.46 (0.35)	-0.58 (0.71)
Condition*FI*anxiety	0.07 (0.12)	3.77 (2.54)	-0.10 (0.09)	0.17 (0.14)	-0.13 (0.11)	0.30 (0.22)
Observations	286	285	285	285	285	216
R^2	0.23	0.04	0.15	0.12	0.05	0.13
Adjusted R^2	0.21	0.01	0.12	0.10	0.03	0.10
Residual Std. Error	0.85	18.26	0.62	0.97	0.80	1.34
F Statistic	12.07***	1.56	6.77***	5.55***	2.10**	4.48***

Note: $^{*}p < .05$, $^{**}p < .01$, $^{***}p<0.001$

RQ2: Is TIM Effectiveness Pronounced among Women with a) Experiential Information Processing and Anxious Attachment towards Mother and Father Figures and b) Women with Low Cognitive Information Processing Patterns?

According to the findings in RQ1, the effect sizes of TIM among women with experiential processing tendencies and anxious attachments (only towards a mother figure) are medium to large (R^2 = .13-.22). TIM's effectiveness among women with

cognitive thinking tendencies, which also significantly interacted with avoidant attachments towards both parental figures in predicting DV outcomes, are medium in effect sizes (R^2 = .11-.13).

RQ3 (additional RQ): Do Insecure Attachment Patterns towards Mother and Father Figures Differently Interact with TIM and Information Processing Tendencies in Predicting DV Termination Outcomes?

According to the findings in RQ1, cognitive women with avoidant attachments towards both father and mother figures significantly benefited from TIM in adjusting their attitudes about perceived internal tools, perceived social support, and leaving intention with medium effect sizes (R^2 = .11-.13). On the other hand, experiential women with only anxious attachments towards a mother figure benefited from the intervention in predicting DV-related attitudes, such as trauma knowledge, and perceived fewer tradeoffs, with medium to large effect sizes (R^2 = .13-.22). TIM was not effective among experiential women with anxious attachments towards a father figure, $p > .05$.

When the moderating role of information processing patterns is not considered (see two-way interaction findings in H2), all attachment patterns except father avoidance significantly moderate TIM effectiveness, $p < .05$. Overall findings from two-way and three-way interactions indicated that TIM effectiveness persisted among women with anxious attachments towards mother and father figures and avoidant attachments towards a mother figure regardless of information processing patterns. On the other hand, the intervention effectiveness would persist among women with father avoidance only when they have cognitive information processing tendencies. The moderating role of father anxiety also became not significant when experiential information processing patterns

were considered as a second moderator, $p < .05$. In conclusion, it could be stated that TIM effectiveness greater persisted among women with insecure attachments towards their mother figures relative to father figures.

CHAPTER V

DISCUSSIONS AND IMPLICATIONS

Adverse childhood experiences (ACE) are a significant predictor of domestic violence (DV) victimization among women (CDC, 2020), yet trauma-informed DV interventions at the mass level are sparse. Trauma-informed DV interventions in clinics and women's shelters exist (Miller et al., 2011; Miller et al., 2016; Sullivan et al., 2018) but may not be accessible among marginalized women without health insurance or awareness of ACE's impacts on their romantic relationships. In addition, some women may be too scared to seek professional help due to perceived harmful consequences from their abusive partners. Advancing health communication and introducing a communication tool to reduce health disparities among battered women with ACE, the current research brings clinical practice trauma-informed care to a larger scale intervention as trauma-informed messages.

With partial support for the current hypotheses, the results revealed TIM effectiveness in predicting DV termination attitudes relative to traditional intervention messages among battered women with childhood trauma. The effectiveness persisted even among women with social-communicative inflexibilities (i.e., those with unhealthy attachment patterns towards parental figures and borderline personality disorder traits) and is more pronounced among women with lower scores in those traits. Considering information processing styles as a second moderator, TIM predicted DV termination outcomes relative to traditional messages among avoidant women with cognitive thinking tendencies and anxious women with experiential thinking tendencies. The effect sizes are larger among the latter group relative to the first group. Explained variance is large for

trauma knowledge development (R^2 = .18 to .23), medium for safety empowerment-related aspects (R^2 = .11 to .13), and small to medium for leaving intention (R^2 = .04 to .11). TIM effectiveness in trauma knowledge development is the most pronounced among women with anxious attachment towards a mother figure plus experiential thinking tendencies (R^2 = .22) and women with BPD symptoms (R^2 = .23). TIM's direct effect on trauma knowledge was also found with a medium effect size (R^2 = .15). General findings indicated TIM as a promising intervention among battered women with ACE and social-communicative inflexibilities.

TIM Direct Effectiveness (H1)

Partially supporting the direct effects hypothesis (H1), TIM significantly predicted greater trauma knowledge, but not other outcomes, relative to control messages. The findings extended trauma-informed DV interventions in clinical settings (Goodman et al., 2016; Miller et al., 2011; Miller et al., 2016) and women shelters (Sullivan et al., 2018), which reported the effects of trauma-informed care on knowledge development, into a larger-scale message intervention. Self-efficacy, leaving intention, and empowerment-related aspects found significant in clinical interventions (Sullivan et al., 2018; Tarzia et al., 2016), nonetheless, are not significant direct outcomes in the current study. Leaving intention and empowerment were significant only among some groups of participants, such as those with lower unhealthy attachment levels towards parental figures and BPD traits. Self-efficacy is not a significant outcome, even considering specific levels of childhood trauma-driven traits and information processing patterns.

TIM's non-significant direct effects on other outcomes but trauma knowledge are not unexpected. Attachment figures' abuse has negatively impacted attitudes of battered

women with ACE for years. Empowering, promoting self-efficacy, and encouraging every battered woman with ACE to terminate their current abusive relationship likely require more intensive intervention than one-time exposure to TIM. Despite the direct effects on only trauma knowledge, TIM is still promising. The intervention influenced knowledge development, a vital foundation for DV termination (Goodman et al., 2016), among battered women with ACE regardless of social-communicative inflexibilities and information processing patterns. Future TIM interventions among battered women with ACE may target trauma knowledge construction as the primary step.

Another recommendation to increase the direct effectiveness of TIM is the integration of other trauma-informed components, such as 'respect' and 'connection' from the RICH model (Saakvitne et al., 200) and 'safety,' 'trustworthiness,' 'choices,' and 'collaboration' from the Five Principles of Trauma-Informed Care (Fallot & Harris, 2008). For example, interactive trauma-informed communication, such as DV survivors as a fictional virtual agent to interact with battered women, may increase TIM's effects on perceived social support and perceived trustworthiness towards DV resources. Clinical interventions, such as cognitive processing therapy (Iverson et al., 2011), may be implemented with TIM exposure under professional monitoring. Individuals with trauma tend to have distorted cognitive patterns about social relationships regardless of their personality traits and information processing patterns, and therefore, may greater benefit from TIM directly once their disrupted thinking patterns are improved. Bottom-up interventions, such as Trauma-Resiliency Model (Grabbe & Miller-Karas, 2017), teaching battered women to acknowledge the connection between their physical sensations and unprocessed early life trauma, may improve the effectiveness of TIM in

predicting DV termination outcomes, such as perceived internal tools, regardless of recipients' information processing patterns and trauma driven traits. Human bodies likely similarly respond to psychological trauma regardless of sociocultural differences (van der Kolk, 2014). A bottom-up intervention along with TIM could increase the direct effectiveness of the messages.

TIM Effectiveness among Women with Trauma Driven Traits (H2 & H3)

Inconsistent with H2a, TIM effectiveness existed even among women with childhood trauma-driven traits. TIM predicted greater trauma knowledge among women with BPD symptoms and anxious attachment to mother and father figures relative to control messages. The intervention effectiveness, however, decreased once those traits increased, supporting H2b. TIM messages also resulted in greater leaving intention among women with BPD traits and avoidant attachments towards a father figure, but only when those trauma-driven traits are at a low level. Supporting H3, TIM's effect sizes are larger among women with anxious attachments and BPD symptoms than women with avoidant attachments with small effect sizes. TIM effectiveness for each trauma-driven trait is discussed below.

Borderline Personality Disorder (BPD) Symptoms

TIM greater significantly predicted trauma knowledge relative to control messages even among women with BPD symptoms. Although the interaction's effect sizes are smaller when BPD scores increased, women with BPD traits at all levels, including those meeting the clinical diagnostic criteria of BPD (i.e., scored more than 7 out of 10 on The McLean Screening Instrument) (Zanarini et al., 2003), significantly benefited from the intervention. The current results extended meta-analyses (Gold &

Kyratsous, 2017; Niedtfeld et al., 2020), which indicated the correlations between BPD and social-communicative inflexibilities into a new aspect: social information processing for knowledge construction is potential among women with BPD symptoms if the information is narrative and contains trauma-informed elements, including empowerment, psychoeducation, and empathetic languages.

TIM effectiveness among women with BPD traits could be explained by high emotional empathy among those subjects relative to individuals without the traits (Finske et al., 2015; Niedtfeld et al., 2017; Luyten et al., 2019). Research suggested high emotional empathy as a maladaptive trait of women with BPD in social contexts, such as feeling overwhelmed by others' distressful emotions despite no personal relevance to the situation, which could impact their new knowledge construction and self-development (Finske et al., 2015; Niedtfeld et al., 2017; Luyten et al., 2019). Nonetheless, the current results revealed that emotional empathy towards social information, especially if the information is trauma-informed and tailored to be personally relevant, could be an adaptive mediator of intervention effectiveness in constructing new knowledge among women with BPD traits. To confirm the assumption, future studies may examine the mediating role of perceived emotional empathy in the relationship between TIM exposure and DV attitudes among women with BPD. In addition, clinical interventions indicated the effectiveness of autobiographical narratives among individuals with BPD (Ryle & Kerr, 2002; Gold & Kyratsous, 2017). Future studies may test the effectiveness of trauma-informed autobiographical storytelling, which may enhance the sense of emotional empathy and increase trauma knowledge development among battered women.

In addition to trauma knowledge, being exposed to TIM predicted greater leaving intention than control messages. The relationship, however, is significant only among women with a low level of BPD symptoms. The results are imperative as a core of BPD is fear of abandonment (Fenske et al., 2015). Women at the high BPD spectrum may be more scared of leaving their abuser to live independently and thus did not significantly respond to TIM relative to control messages. The results extend prior research, which indicated lower valence ratings of socioemotional visual cues (i.e., facial expressions) mediated by reduced exploration of the cues, especially under a prolonged stimuli presentation (Bortolla et al., 2020; Gold & Kyratsous, 2017), into textual cues such as TIM, which require a longer period than visual cues to process.

Other outcomes, such as self-efficacy, self-compassion, and empowerment-related aspects (i.e., perceived tradeoffs, perceived internal tools, and perceived social support), were not significantly predicted by the interactions between TIM and BPD. Unlike trauma knowledge and leaving intention, the mentioned attitudes tend to be formed over the years throughout one's life experiences and are more challenging to be adjusted. It is not uncommon that battered women with BPD traits and a childhood trauma history did not significantly improve their life-long cultivated attitudes, such as self-compassion and perceived social support, by a one-time exposure to intervention messages.

Experiential Avoidance Theory (Mohi et al., 2021) posited that a feature of BPD is an unwillingness to tolerate difficult internal experiences, which may result in lower value engagement for self-development, such as estimating the pros and cons of staying in an abusive relationship. As self-efficacy, self-compassion, and empowerment require a certain level of value engagements, such as valuing oneself as worthy of being loved,

those outcomes might be more challenging to improve from brief exposure to TIM. The assumptions are supported by significant correlations between high BPD and greater perceived tradeoffs in ending an abusive relationship and less perceived social support, which both are safety-related empowerment aspects (see Table 2). Despite significant effects on only leaving intention and trauma knowledge, TIM did not predict adverse outcomes among women with BPD traits relative to the control group. The results indicated no potential harm from being exposed to intimate relationship information if the information is trauma-informed. In contrast, prior studies reported maladaptive attitudes and behaviors, such as social withdrawal and aggression, from viewing non-trauma-informed intimacy-related stimuli among women with BPD symptoms (Lavner, Lamkin, & Miller, 2015).

Informed by significant effects on trauma-knowledge and leaving intention, TIM interventions targeting women with BPD traits may prioritize trauma education and ways to transition leaving intention into an actual action as a primary intervention step. The effect size of the interaction between TIM and BPD in predicting trauma knowledge is large, whereas predicting leaving intention is small. Therefore, trauma-informed interventions targeting BPD women may primarily focus on providing trauma knowledge, which is a strong predictor of positive behavioral changes associated with abusive relationships (Wilson et al., 2015; Sullivan et al., 2018). Because of larger significant effects among women with a low level of BPD symptoms relative to those with a higher level of the traits, women with fewer BPD symptoms should be considered a primary target of TIM. Along with TIM, more intensive clinical interventions, such as dialectical behavioral therapy and cognitive-behavioral training (Grabbe & Miller-Karas,

2017; Iverson et al., 2011), may be considered for women with a high level of BPD symptoms with the consideration of safety and access to the interventions.

Insecure Attachment Patterns towards Parental Figures

Battered women with a low level of anxious attachment towards mother and father figures in the TIM condition reported greater trauma knowledge than those in the control group. The interaction between conditions and anxious attachment towards parental figures are large in effect sizes, indicating TIM effectiveness, especially among women with anxious attachment patterns. The interaction's effect sizes became smaller once anxious attachment scores towards both parental figures increased. Avoidant attachments towards mother and father figures did not significantly interact with TIM in predicting trauma knowledge. The results align with a meta-analysis documenting less social information processing associated with intimacy among women with high avoidant attachment scores (Dykas & Cassidi, 2011; Levy, Kivity, Johnson, & Gooch, 2018; Lo, Chan, & Ip, 2017). Despite its non-significant effectiveness, TIM is not perceived as a threat among battered women with avoidant attachments towards parental figures because the intervention messages did not yield any adverse outcomes relative to the control group. The findings indicated low to no dangerous components of TIM among women with avoidant attachment. Future research may employ a qualitative approach to explore battered women with avoidant attachments and their perceptions of TIM to inform a potential mediator obstructing trauma knowledge development among avoidant women.

In addition to trauma knowledge, avoidant attachment towards a mother figure significantly moderated the effects of TIM on leaving intention. Exposure to TIM predicted more leaving intention than control messages only among women with low

avoidant attachment scores towards a mother figure while yielding non-significant effects among those with average to high avoidant attachment scores. Women with high avoidant attachment scores likely avoid appraising social relationships related information (Ghafarimoghadam & Dehghani-Arani, 2019; Liu et al., 2017) and may less consider ending their current intimate relationship regardless of to which message types they are exposed. The current results support the statement because women with avoidant attachments towards a father figure at all levels and towards a mother figure at average to high levels did not significantly improve leaving intention and other DV attitudes when being exposed to TIM.

Except for greater leaving intention and trauma knowledge, TIM did not significantly interact with unhealthy attachment patterns towards mother and father figures in predicting other outcomes. The results are not unexpected as impaired attachments towards parental figures have likely been formed over the years and have yielded profound impacts on adulthood self-efficacy and ability to feel empowered. It seems imperative that one-time exposure to TIM may not be adequate to improve that long-time cultivated self-views. More intensive clinical interventions, such as trauma-informed cognitive behavioral therapy (Grabbe & Miller-Karas, 2017; Iverson et al., 2011), could be considered to improve dysfunctional attitudes among battered women with impaired attachments towards their parental figures. Despite non-significant effects on certain outcomes, viewing TIM did not lead to negative consequences among insecure women. TIM is still promising as it significantly predicted greater trauma knowledge, a vital foundation of abusive relationship termination, among women with anxious

attachments towards both parental figures. The intervention also predicted leaving intention among women with low avoidant attachments towards their mother figures.

Information Processing Patterns as a Second Moderator of TIM Effectiveness (RQ1 & RQ2)

To answer RQ1, information processing patterns, including cognitive and experiential, were found to significantly moderate the interactions between viewing TIM and insecure attachment patterns towards both parental figures in predicting DV termination outcomes. The constructs, nonetheless, did not significantly moderate the interaction between viewing TIM and BPD traits. To be more specific regarding cognitive information processing tendencies, TIM greater predicted empowerment aspects, including perceived internal tools and social support, among women with low to average father avoidant attachment and low to average cognitive thinking tendencies. The effect sizes of TIM on all empowerment aspects are medium. In addition to empowerment facets, high cognitive information processing tendencies significantly moderated the interaction between TIM and mother avoidant attachment in predicting leaving intention with a small effect size. Regarding experiential information processing, TIM predicted less perceived tradeoffs among women with a low level of anxious attachment towards a mother figure and experiential information processing patterns at all levels with a medium effect size. At all levels, the information processing pattern also significantly moderated TIM and mother anxious attachment interaction in predicting trauma knowledge with a large effect size.

The findings answered RQ2 regarding the pronounced effectiveness of TIM among battered women with experiential information processing and anxious attachment

and women with low to average cognitive information processing tendencies and avoidant attachments. The results are consistent with narrative studies, revealing narrative effectiveness among individuals with experiential and low cognitive information processing patterns (Braverman, 2008; Epstein, 2012; Shen et al., 2015). In contrast to narrative studies suggesting narrative effectiveness among individuals with low cognitive processing (Braverman, 2008), one interesting aspect in the current research is that TIM effects on leaving intention were found significant among women with high cognitive processing patterns and avoidant attachment towards a mother figure. The nature of the attitudinal outcome could explain the results. Leaving intention requires cognitive abilities to estimate the pros and cons of continuing a current abusive relationship and, therefore, might be significantly influenced only among women with high cognitive information processing tendencies. The second moderating role of information processing tendencies for TIM effectiveness when each trauma-driven trait is the first moderator is discussed below.

BPD Traits as the First Moderator

Information processing patterns, including cognitive and experiential styles, did not significantly moderate the interaction between TIM and BPD symptoms in predicting any attitudinal outcomes. Considering the findings and the significant two-way interactions between TIM exposure and BPD in predicting trauma knowledge and leaving intention, previously mentioned, TIM might predicting DV attitude changes among women with BPD traits regardless of their information processing patterns. The results contrast to existing studies (Arntz et al., 2020; Dixon-Gordon et al., 2011; Fenske et al., 2015; Fonagy et al., 2017; Gold & Kyratsous, 2017; Kaiser et al., 2016; Thome et al.,

2016), which indicated women with BPD's tendencies to utilize experiential thinking patterns to process intimacy-related information due to their hypervigilance towards perceived or actual abandonment. TIM discusses intimacy and BPD congruent words, such as relationship termination and words related to trauma and abuse. The information, nonetheless, did not significantly impact BPD women with a specific information processing pattern.

The non-significant three-ways interactions of TIM, BPD, and information processing styles, especially regarding the experiential system, might occur for the following reasons. First, TIM as a narrative that combines BPD congruent and emotional information in a trauma-informed way (i.e., empowering, psycho-educating, and empathetic) is not perceived as a threat. The information, therefore, did not emotionally trigger women with BPD who are prone to experiential information processing to avoid abandonment threats. If social information were perceived as an attachment-related threat, women with high BPD traits would have expressed negative responses, such as withdrawal from information processing and developing negative attitudes towards the social information (Arntz et al., 2020; Dixon-Gordon et al., 2011; Fenske et al., 2015; Fonagy et al., 2017; Gold & Kyratsous, 2017; Kaiser et al., 2016; Thome et al., 2016). Even neutral or ambiguous social information could be biasedly interpreted negatively and resulted in maladaptive outcomes, such as believing that the information is not trustworthy (Fertuck et al., 2013; Miano et al., 2013). The current study reported no significant interactions of experiential thinking patterns, TIM exposure, and BPD in predicting any adverse outcomes. Future research may examine the mediating role of

perceived threats, thoughts, and emotions towards TIM in predicting DV attitudes among women with BPD across information processing patterns.

Another potential explanation regarding the non-significant interaction effects of TIM, information processing styles, and BPD traits is that information processing patterns as a personality trait might not significantly influence attitudinal changes as much as current affective states, which were not assessed in the current study. Individuals with BPD tend to react towards external stimuli based on their current feelings and constantly feel negative emotions, such as sadness and hopelessness (Ebner-Priemer et al., 2005; Fenske et al., 2015; Fonagy et al., 2017; Niedtfeld et al., 2017). Being exposed to TIM may generate some neutral or positive emotions because it yielded positive outcomes among participants with BPD, such as trauma knowledge and leaving intention. Future research should account for mood states and retest the moderating roles of information processing patterns.

A third potential explanation regarding the non-significant three-way interaction effects in the current study is the use of textual stimuli instead of visual cues, which were utilized as stimuli in prior experiments (Arntz et al., 2000; Atkinson et al., 2009; Preissler et al., 2010; Thome et al., 2016). Systematic reviews revealed sensitivities towards emotionally salient visual cues among people with BPD because their distorted experiential processing system constantly seeks for perceived threats, such as angry or sad faces (Fonagy et al., 2017a,b; Lazarus et al., 2014). On the other hand, TIM is textual and specifically designed to make recipients feel empathized, empowered, and educated. Thus, the content may not act as a potential trigger of BPD information processing patterns, such as negative emotional processing and attitudinal responses.

Non-significant moderating roles of information processing patterns in the current study may occur because of the utilization of self-reports to assess information processing tendencies, while prior research likely used implicit tasks, such as Stroop tasks or eye-tracking (Arntz et al., 2000; Keiser et al., 2017; Preissler et al., 2010; Thome et al., 2016). Stroop tasks revealed women with BPD's attentional biases towards negative emotional and borderline salient words, and the studies assumed distorted information processing patterns from more or less inhibitory control towards those cues relative to subjects without BPD symptoms (Arntz et al., 2000; Keiser et al., 2017; Preissler et al., 2010; Thome et al., 2016). Despite reliability, an implicit measure may not capture daily life social information processing that is likely beyond different sets of words in Stroop tasks. Human interactions with other social agents, including intervention messages, are likely complex and narrative-oriented. Thus, viewing a trauma-informed narrative may yield different results considering one's self-reports of their information processing relative to viewing words in Stroop tasks. Future studies may assess social information processing among women with BPD using longer social texts, such as TIM, as a predictor and self-reports of information processing patterns and implicit information processing tasks as the moderators to identify the consistency of implicit and explicit information processing patterns towards TIM. The protocol may clarify information processing among women with BPD and standardize information processing measures for validity and reliability across studies.

It might be possible that non-significant three-ways interaction effects of viewing TIM, BPD, and information processing patterns in the current study result from low statistical power. Although the sample size was calculated based on prior evidence of

trauma-informed domestic violence interventions (Sullivan et al., 2018; William et al., 2015), those studies did not assess the moderating roles of BPD and information processing traits. Thus, the sample size estimation and relevant effect sizes might be different if those traits are considered.

While the reasons above could explain the non-significant moderating role of experiential information processing patterns, the non-significant moderating role of cognitive thinking patterns among women with BPD traits is not unexpected according to the Cognitive Experiential Self Theory (CEST) (Epstein, 2012) and BPD information processing frameworks (Fenske et al., 2015; Fonagy et al., 2017a,b; Niedtfeld et al., 2017). From a CEST perspective, the experiential system is thought to be a human's default mode regardless of psychological conditions. Analytical thinking patterns are likely employed when individuals process new or unfamiliar social information. As participants are battered women with childhood trauma, the story in TIM is not unfamiliar, and its effects may not be significantly pronounced even among women with natural tendencies to enjoy cognitive thinking. From a BPD and information processing perspective, individuals with BPD likely suffer from impaired cognitive abilities due to developmental abuse (Fonagy et al., 2017a,b) and, thus, may fail to utilize the cognitive information processing route even when needed. Therefore, the non-significant moderating role of cognitive thinking tendencies among battered women with BPD and childhood trauma is not unexpected.

Insecure Attachments as the First Moderator

The current findings revealed TIM effectiveness in women with avoidant attachments towards both mother and father figures plus cognitive thinking tendencies

and women with anxious attachments towards a mother figure with experiential thinking patterns. The results support prior studies indicating greater cognitive utilization among avoidant individuals and emotional, experiential thinking predispositions among anxious individuals (Dykas & Cassidi, 2011; Ghafarimoghadam & Dehghani-Arani, 2019; Liu et al., 2017). While those information processing patterns may occur to avoid psychological pain from intimacy-related information processing, the current findings revealed that those maladaptive traits might become useful in the context of trauma-informed narratives. Systematic reviews (Dykas & Cassidi, 2011; Pietromonaco & Beck, 2015) suggested that insecure individuals avoid social information processing if the information potentially causes psychological pain. Conversely, if the information is not perceived to induce any pain, insecure individuals may process the information in a negatively biased schema consistent with their negative attachment-related experiences. As TIM did not yield any adverse attitudinal outcomes, the intervention might not be perceived as a psychological pain trigger or a reminder of an existing negative framework.

Viewing empowering, empathetic, and educational messages about DV may convince avoidant women with perceived cognitive thinking tendencies to use their cognitive abilities, which are naturally utilized to divert attention away from attachment-related information, analyze and process TIM and construct adaptive DV attitudes. In the same way, sensitivities towards abandonment-related information among anxious women may be a functional element if the information discusses a relationship termination in a trauma-informed manner. Unsurprisingly, information processing tendencies that are not predisposed to each attachment style are not significant moderators of TIM effectiveness. The experiential thinking system is not a significant moderator among avoidant women,

and the cognitive thinking system is not a significant moderator among anxious women in TIM processing. Thus, TIM seems to be particularly pronounced among insecure women whose perceived information processing styles match their attachment style's implicit information processing patterns.

To be more specific regarding the level of each information processing route across attachment patterns, the cognitive route at a high level significantly interacted with TIM and low to average mother avoidant attachment in predicting greater leaving intentions. The information processing system also significantly interacted with TIM and low to average father avoidance in predicting safety empowerment aspects (i.e., perceived internal tools and social supports) relative to control messages. The results indicated low avoidant attachments towards parental figures and cognitive thinking tendencies at low to average levels as supportive factors of TIM effectiveness and DV termination. As mentioned earlier, TIM effectiveness among women with low cognitive thinking tendencies might be because TIM is narrative, which requires low cognitive abilities to process, and, thus, is influential among people with perceived low cognitive processing tendencies (Braverman, 2008; Dunlop et al., 2009; Epstein, 2012; Petty & Cacioppo, 1986). TIM narrative, nonetheless, is likely persuasive among battered women with high cognitive information processing tendencies when the target attitude requires cognitive skills to construct, such as leaving intention in the current study. According to the significant role of cognitive thinking tendencies as a second moderator, cognitive training, such as rational thinking practices and cognitive-behavioral therapies, should be integrated into TIM interventions, especially among avoidant women.

Regarding experiential thinking patterns, the information route at all levels significantly interacted with TIM and anxious attachment patterns towards a mother figure at all levels in predicting greater trauma knowledge relative to control messages with large effect sizes. At all levels, the experiential thinking pattern also interacted with TIM and a low level of anxious attachment towards a mother figure in predicting less perceived tradeoffs of ending an abusive intimate relationship relative to viewing control messages with medium effect sizes. A meta-analysis (Dykas & Cassidi, 2011) posited that anxious women likely utilize their distorted experiential thinking patterns to process social information, which obstructs knowledge development and positive attitudinal changes, mainly if such social information contains attachment-related words activating their negative attachment-related schemas. The current results extended the meta-analysis into a new aspect: experiential processing sensitivities among women with highly anxious attachment patterns can be adaptive even if social information is trauma-informed. Being exposed to TIM depicting a female survivor's story and her insight into childhood trauma and DV termination, anxious women's experiential sensitivities towards attachment-related information may help capture and process those attachment-related aspects. The process yielded positive attitudes about DV termination. In other words, attentional biases towards attachment salient information may be functional if such information integrates psychoeducation, empathetic statements, and empowering aspects under the umbrella of trauma-informed practices.

Moderating Roles of Attachment Patterns across Parental Figures (RQ3)

The findings, previously mentioned, regarding TIM effectiveness among avoidant women with cognitive processing tendencies and anxious women with experiential

processing tendencies are not unexpected and consistent with prior research (Dykas & Cassidi, 2011; Pietromonaco & Beck, 2015). TIM is likely effective among insecure women whose implicit information processing (e.g., inhibitory control, attentional biases towards emotional cues) matches perceived information processing tendencies (i.e., cognitive, experiential). However, an aspect that has been rarely examined in previous studies is whether attachments towards parental figures play different roles in social information processing? The answer in this current research context is 'likely.'

To simply state, cognitive women with avoidant attachments towards both father and mother figures benefited from TIM, while experiential women with only anxious attachments towards a mother figure did. To be more specific, the current findings revealed that cognitive women with avoidant attachments towards father and mother figures reported greater leaving intention, perceived internal tools, and social support when viewing TIM relative to control messages. Experiential omen with anxious attachment towards a mother figure reported more trauma knowledge and less perceived tradeoffs in ending their current abusive relationship. TIM was not shown effectiveness among experiential women with anxious attachments towards a father figure.

A potential reason is that the effects of father attachment on romantic relationship attitudes may be more profound than mother attachment among heterosexual battered women. Both father figures and a partner are male and thus may share some similarities that induced the perception that ending a relationship with the partner is comparable to cutting off a familiarity with the father figure. Forming DV termination attitudes among women with anxious attachment towards a father, thus, could be challenging even when receiving TIM. The challenge might be intensified when experiential information

processing is considered. Experiential and anxious women tend to be emotional and fear abandonment, which might be strengthened from perceived similarities between a partner and a father as an influential male figure.

When the moderating role of information processing patterns is not considered, all attachment patterns except father avoidance significantly moderate TIM effectiveness. The findings support the previous assumption regarding insecure attachment towards a father figure as a risk factor of TIM effectiveness in the context of DV intervention among battered women with adverse childhood experiences. Future research may replicate the current study to clarify the moderating role of attachment across parental figures in predicting TIM effectiveness across sample groups.

Implications for Health Communication

The current findings contributed to two theoretical frameworks: a) information processing and childhood trauma-driven traits and b) Cognitive Experiential Self Theory (Epstein, 2012) and narrative frameworks as communication concepts. Practical implications are also discussed in this section.

Information Processing and Trauma-Driven Traits

The first implication is that limited information processing among battered women with childhood trauma can be improved with the 'right kind of social information.' TIM in the form of a textual narrative emphasizing psychoeducation, empowerment, and empathetic words effectively predicted DV termination attitudes in the current research context. The results extended prior literature, which addressed limited information processing in response to attachment-related visual cues (Arntz et al., 2000; Atkinson et al., 2009; Preissler et al., 2010; Thome et al., 2016), into effective

information processing of a trauma-informed narrative even among battered women with social-communicative inflexibilities.

According to Stroop tasks and eye-tracking studies (Arntz et al., 2000; Atkinson et al., 2009; Preissler et al., 2010; Thome et al., 2016), individuals with trauma-driven traits (i.e., BPD features and insecure attachment patterns) likely developed limited social information processing, especially towards short words and non-trauma informed visual cues. Relative to textual stimuli, visual stimuli likely take a shorter time to be processed. Therefore, individuals with trauma-driven traits may be prone to use their distorted automatic experiential system to process those cues, which potentially leads to maladaptive attitude development (Domes, Schulze, & Herpertz, 2009; Dyck et al., 2009). Textual social information takes more time to comprehend than visual cues and, thus, less activate existing automatic experiential frameworks, especially if carefully designed to make recipients feel empathetic and empowered. Even prolonged exposure to a visual cue that is not trauma-informed may yield negative attitudes among women with trauma-driven social-communicative inflexibilities. A study reported that prolonged exposure to negative faces reduced valence ratings among women with BPD than subjects without the symptoms (Bortolla et al., 2020). Future studies may examine whether the results are different if visual cues are trauma-informed, such as integrating a trauma-informed textual label under a figure. Future research may replicate the current study to confirm the effectiveness of trauma-informed narratives to provide a holistic viewpoint of social information processing among individuals with adverse childhood experiences.

The second implication is that different contexts of social stimuli may yield different outcomes among battered women with trauma-driven traits. Viewing a set of single words associated with abuse and trauma in a non-trauma-informed context during Stroop tasks is significantly related to impaired information processing patterns, such as greater inhibitory control among avoidant individuals (Dewitte & De Houwer, 2010; Dykas & Cassidi, 2011), attentional biases among individuals with anxious attachments or BPD traits (Fenske et al., 2015; Niedtfeld et al., 2017), and lower abilities to solve subsequent social tasks among women with BPD symptoms (Dixon-Gordon et al., 2011). On the other hand, being exposed to abuse and trauma congruent words in a trauma-informed narrative in the current study resulted in positive outcomes, such as greater trauma knowledge and leaving intention relative to control messages.

In a trauma-informed context, attentional biases among women with anxious attachment or BPD traits may navigate them to useful information, such as healing strategies and empowering safety plans. Avoidant women may naturally avoid processing trauma-related words (Dykas & Cassidi, 2011). In a trauma-informed context where those words are surrounded by empathetic and empowering statements, avoidant women may be more receptive to the information. DV termination attitudes, therefore, were formed. Future research may use Stroop tasks or eye-tracking to measure attentional biases towards or attention shifts from trauma-congruent words relative to trauma-informed words. The processes may further clarify TIM effectiveness among battered women with childhood trauma-driven traits. The protocol may increase ecological validity because real-life social information tends to be more complex than a set of single words in Stroop tasks or facial expressions during an eye-tracking process.

A third relevant implication suggests battered women with BPD traits or anxiety attachments as primary recipients of TIM according to the large effect sizes of TIM among the population groups relative to battered women with avoidant attachments. Individuals with BPD symptoms or anxious attachments likely have attentional biases towards attachment figures-related information (Atkinson et al., 2009; Pietromonaco & Beck, 2015). TIM discusses multiple attachment figures, including primary caregivers as a root of DV involvement and a romantic partner, while the control messages discuss only the partner. Therefore, the intervention messages might catch attention among BPD and anxious women with biases towards attachment cues greater than control messages.

Despite TIM's smaller effect sizes among avoidant women, TIM should still be endorsed among the population group. Avoidant individuals naturally less process information associated with attachment figures to avoid being reminded of their relevant painful memories (Dykas & Cassidi, 2011). TIM's effectiveness indicated that the intervention messages, at least, less likely cause psychological pain, despite its discussion about abusive parental figures and a romantic partner. Interventions may target women with anxiety attachments and BPD symptoms as primary recipients and women with avoidant attachment patterns as secondary recipients.

The fourth relevant implication is that more intensive interventions may be needed among women with high childhood trauma-driven traits. TIM's effectiveness in predicting trauma knowledge decreased once trauma-driven traits increased and are not significant in predicting leaving intention among women with average to high BPD and those with average to high avoidants attachment scores. Other forms of interventions, such as dialectical behavioral therapy or cognitive behavioral training (Grabbe & Miller-

Karas, 2017; Iverson et al., 2011), should be considered along with TIM among women with high trauma-driven traits.

The fifth implication is limited TIM effectiveness in influencing safety-related empowerment among battered women with adverse childhood experiences. TIM significantly interacted with trauma-driven traits in predicting trauma knowledge and leaving intention. However, the intervention did not significantly predict safety empowerment aspects among battered women with trauma-driven traits relative to control messages. However, when information processing styles were considered a second moderator, TIM effects on empowerment aspects became significant. Therefore, TIM effectiveness in predicting safety-related empowerments did not exist among battered women with adverse childhood experiences in general. Rather, the intervention effectiveness occurred only among 'avoidant women who like to think' and 'anxious women who like to feel.' Individuals with childhood trauma likely suffered from a low sense of self-authorities caused by primary caregivers (Loving & Sbarra, 2015). Gaining the sense of power back is complex and may not simply occur with anyone. Therefore, the current results regarding sensitive women groups to TIM in developing safety empowerment aspects are reasonable.

Finally, the effectiveness of TIM among women with trauma-driven traits is not unexpected even with only one-time exposure as the intervention shares mutual aspects with clinical interventions, such as Mentalization-Based Treatment (MBT; Bateman & Fonagy, 2013) and Schema-Focused Therapy (SFT; Young & Behary, 1998). MBT focuses on mentalization or the ability to recognize one's thoughts and feelings about behaviors. SFT as a cognitively oriented therapy emphasizes adjusting dysfunctional

cognitive patterns impacted by adverse childhood experiences. Both types of intervention also focus on psychoeducation and empowerment like TIM, although TIM is more accessible and is not necessarily delivered by a licensed psychologist.

Cognitive Experiential Self-Theory (CEST) and Narratives

The first theoretical implication to CEST (Epstein, 2012) and relevant narrative frameworks (Dunlop et al., 2009; Epstein, 2012; Petty & Cacioppo, 1986) is that TIM effectiveness, especially in predicting empowerment aspects, likely existed when perceived information processing patterns match with attachment styles' implicit information processing tendencies. Implicit tasks (e.g., Stroop tasks and eye-tracking) revealed inhibitory control and attention shifts among avoidant women and attentional biases towards emotional cues among anxious women when viewing intimacy-related information (Arntz et al., 2020; Dixon-Gordon et al., 2011; Fenske et al., 2015; Fonagy et al., 2017; Gold & Kyratsous, 2017; Thome et al., 2016). Although those studies did not assess the consistency between the implicit attitudes and self-reported information processing patterns, cognitive suppression or attentional shifts from attachment-related cues among avoidant individuals may suggest their perceived cognitive information processing tendencies. In the same way, implicit attentional biases towards emotional cues and attachment figures may suggest sensitivities towards experiential, emotional information processing among women with anxious attachment. Insecure women's implicit attachment-related frameworks may explain their perceived information processing tendencies. Anxious women fear being abandoned and perceived themselves as more sensitive towards emotional cues, especially associated with attachment figures (Ainsworth et al., 1978; Deniz, Hamarta, & Ari, 2005). Avoidant individuals do not want

to experience any emotional pain about attachments and likely identify themselves as more thinking than feeling-oriented (Ainsworth et al., 1978; Deniz et al., 2005).

Research suggested that individuals with contrast implicit and explicit attitudes likely develop impaired information processing and psychopathology (Epstein, 2012). Although battered women with adverse childhood experiences may develop some social-communicative inflexibilities, such as BPD traits and unhealthy attachment patterns (Dykas & Cassidi, 2011; Fenske et al., 2015; Fonagy et al., 2017), they may still be able to process social information if their implicit attitudes are not extremely contrasted to their explicit frameworks. Supporting the statement, the current findings revealed TIM effectiveness among avoidant women with cognitive information processing tendencies and anxious women with experiential information processing tendencies. TIM effectiveness was not shown among women whose perceived information processing tendencies do not match their attachment styles' implicit information processing patterns. Thus, anxious women with perceived cognitive information processing tendencies and avoidant women with perceived experiential information processing tendencies did not benefit from the intervention. Future research may examine the moderating roles of attachment patterns, relevant implicit information processing (e.g., inhibitory control, attentional shifts, attentional biases), and explicit information processing (e.g., cognitive versus experiential) to further clarify TIM effectiveness.

The third implication is that TIM is more likely to be effective among women with perceived experiential information processing tendencies and anxious attachments than women with cognitive information processing patterns and avoidant attachments. TIM is designed as a narrative and thus may influence people with experiential

processing patterns, who are more sensitive to emotional cues than individuals with cognitive information processing. The statement is supported by narrative studies indicating the communication effectiveness among individuals with experiential information processing tendencies (Braverman, 2008; Dunlop, 2009; Epstein, 2012; Shen et al., 2015). Narrative effectiveness among the population group could be explained by self-referencing and perceived emotional relevance with the content (Dunlop et al., 2009; Moyer-Gusé, 2008; Moyer-Gusé and Nabi, 2010; Murphy et al., 2013). Future research may assess the mediating role of perceived self-referencing and emotional relevance to understand the effectiveness of TIM among battered women with different information processing patterns. TIM may integrate numbers or statistical information if specifically targetting avoidant women with high cognitive processing tendencies as they may greater respond to concrete examples and numbers more than narratives (Epstein, 2012; Petty & Caioppo, 1986). Studies may compare TIM as a narrative versus a non-narrative (e.g., a trauma-informed pamphlet in a doctor's office) among women with different information processing tendencies and trauma-driven traits.

The fourth implication is that levels of information processing patterns likely predicted different DV outcomes. The significant effects of TIM on empowerment aspects are significant at only a low to medium level of cognitive processing, while the effects on leaving intention are significant at a high cognitive processing level. Leaving intention requires cognitive abilities to estimate the pros and cons of continuing an abusive relationship. Perceived high cognitive thinking tendencies, thus, greater interacted with the intervention messages in influencing the attitude. Safety-related empowerment aspects, on the other hand, may require less cognitive effort. TIM effects

on empowerment, therefore, are found even among women with low to average perceived cognitive information processing tendencies. Regarding trauma knowledge and perceived tradeoffs, both outcomes are significantly predicted by all levels of experiential information processing patterns. Trauma knowledge development is associated with cognitive abilities, whereas perceived tradeoffs as an empowerment aspect are related to analytical and emotional capacities. Both outcomes, despite different cognitive-affective aspects, are significantly predicted by experiential information processing tendencies. The findings are another key point indicating TIM effectiveness in predicting DV outcomes among women with experiential processing regardless of the affective-cognitive natures of target attitudes.

Finally, the current study suggested that measuring two different systems of information processing patterns, including cognitive and experiential, may yield different outcomes from assessing information processing as one holistic system. Prior research regarding information processing and childhood trauma likely assessed information processing as an executive function (e.g., inhibitory control and attentional biases) (Dykas & Cassidi, 2011; Ghafarimoghadam & Dehghani-Arani, 2019; Liu et al., 2017). Therefore, the roles of different information processing routes across individuals with trauma-driven traits were not much documented in previous literature. The lack of evidence limits future interventions from designing messages to fit with recipients' information processing styles. For instance, Bowlby (1973) suggested that individuals develop experience-based mental representations (i.e., internal working models) of social relationships. Such models assist in gathering and processing information related to social agents, including romantic partners and parents (Dykas & Cassidi, 2011). Bowlby (1973),

nonetheless, did not categorize social information processing patterns into cognitive versus emotional patterns. Instead, the researcher emphasized social information processing as one holistic system driven by cognition, emotions, and behaviors related to social agents. In an extension of Bowlby's theory (1973, 1980), the current findings applied CEST (Epstein, 2012) as a dual information processing framework and indicated a significant role of cognitive information processing among avoidant women and experiential information processing among anxious women. Future studies may replicate the current research to provide additional perspectives to dual information processing theories relevant to TIM effectiveness.

Practical Implications

Practical implications include the potential use of TIM as a tool to decrease health disparities at a larger scale among individuals with childhood trauma in general and battered women with adverse childhood experiences in specific. Battered women with a childhood trauma history likely suffer from social stigmatization of staying in an abusive relationship and financial limitations and may not seek a clinical intervention (Andruczyk, 2015; Zink & Sill, 2014). Among those who decide to see a healthcare professional, the intervention they receive might not be trauma-informed and may negatively influence their tendencies to continue the treatment. For instance, battered women with a history of childhood sexual abuse may resist a domestic violence examination associated with a vaginal penetration due to their negative childhood memories (Dalenberg et al., 2017; Harris & Fallot, 2001; Loving & Sbarra, 2015).

To decrease health disparities and increase trauma-informed intervention accessibilities among battered women with childhood trauma, TIM could be applied and

distributed via mass media platforms, such as Facebook or online forums, where at least approximately 800 words as the current stimuli are allowed to be posted. Among attitudinal outcomes, trauma knowledge has the highest variance explained by the interaction of TIM and trauma-driven traits and thus may be prioritized by a TIM intervention. Women with low BPD traits and insecure attachment patterns may be targeted as initial recipients as TIM effects are more pronounced among these groups. Among women with high insecure attachment levels and BPD traits, clinical interventions should be integrated to increase the effectiveness of TIM. According to the significant effects of cognitive information processing among avoidant women, cognitive training, such as analytical thinking or practicing reflections on one's thoughts, feelings, and behaviors, should be considered along with TIM interventions. In the same way, healthy emotional practices, such as mindfulness methods, should be implemented among women with anxious attachments according to the significant interaction between TIM exposure, the attachment pattern, and experiential information processing tendencies.

CHAPTER VI

LIMITATIONS AND FUTURE RESEARCH

The current study contains limitations. First, the current research should be replicated to validate the findings due to rare evidence of the three-way interactions between conditions, trauma-driven traits, and thinking patterns. It should be noted that the effect sizes of the three-way relationships in the current study are medium to large with small standard errors, indicating low Type I errors. A posthoc power analysis, based on detected effect sizes and the alpha levels (0.05), indicated high statistical power (0.9-1.0), meaning that the findings are statistically valid. Therefore, the point of replicating the current study may not be about attaining more statistical power from increasing sample sizes. Instead, the replication should be implemented to provide validity and a solid theoretical framework of TIM effectiveness across samples of battered women with trauma-driven traits and information processing patterns. MTurk participants might be more analytical due to the nature of their work (i.e., reading and filling out questionnaires) relative to battered women with childhood trauma who do not have internet access or work on different types of jobs requiring less information processing. Testing TIM effectiveness among non-MTurk marginalized females can increase the external validity of the current findings.

Another limitation includes no direct effects on other outcomes except trauma knowledge. TIM might not be effective for all battered women with a childhood trauma history in changing their long-term cultivated attitudes, such as self-efficacy, or attitudes that require strong willpower for changes, such as perceived empowerment. Moderation analyses suggested TIM effectiveness among certain levels of insecure attachments and

all levels of BPD with greater degrees of the traits representing lower TIM effectiveness. Future studies may include more TIM elements, such as cultural values and a safe environment (Grabbe & Miller-Karas, 2017; Fallot & Harris, 2008; Nummenmaa et al., 2014; Sakvitne et al., 2000), to examine whether more direct effects on attitudinal changes are found. Research may consider testing TIM effectiveness among women with existing knowledge about DV and the impacts of early life trauma on adulthood relationships, such as those who have lived in shelters. Direct effects may greater exist among those participants.

Although the current research did not find direct effects of TIM on attitudes except trauma knowledge, the outcome is vital for behavioral and attitude changes (Miller et al., 2011; Miller et al., 2016; SAMHSA, 2014; Sullivan et al., 2018). Understanding the effects of trauma on one's life is one of the first steps for domestic violence termination and avoidance of future involvements. Despite not many direct effects, the current findings regarding TIM moderators are crucial as they indicate sensitive groups of women towards TIM: avoidant women with cognitive thinking tendencies, anxious women with experiential thinking tendencies, and women with lower scores in BPD. Finding moderated effects is not unexpected due to the complexities of information processing among individuals with a history of childhood trauma, whose internal working models are distortedly constructed in early life (Dykas & Cassidi, 2011; Fenske et al., 2015; Pietromonaco & Beck, 2015).

A third relevant limitation of the current findings is a cross-sectional design. The long-term effectiveness of TIM in predicting domestic violence attitudes is not assumed and should be further explored. It is not uncommon for women experiencing domestic

violence victimization to relapse after intervention and return to their abusive partners (Maselesele, 2011). The abusive relationship's cycle contains a period where an abuser tries to reconcile the relationship. Women with childhood trauma who are already familiar with abusive patterns from their childhood may be more likely to get back to the intimate abusive relationship relative to those without adverse childhood experiences (Maselesele, 2011; Li et al., 2019). Longitudinal randomized controlled trials are needed to confirm TIM effectiveness over time.

The next crucial limitation is potential Type I inflation rates. Although 289 cases in the current study are sufficient to detect significant relationships for a model containing three predictors, which is the maximum number of the current study, the subject-to-item ratio should be considered regarding the current small sample size (Jafari & Ansari-Pour, 2018). For a single test, the probability of not getting a Type I error is 1- α. The probability would be m(1- α) for independent tests, where m is the number of tests (Jafari & Ansari-Pour, 2018). The probability of not getting Type I errors for multiple tests in a sample group is 1-m(1- α). Therefore, the Bonferroni correction for a single test is equal to α/m (Jafari & Ansari-Pour, 2018). The total tests in the current study, including the non-significant models, are 42. Thus, the alpha threshold considering all models is .05/42 = .001. Using the new alpha value, the interaction between conditions and BPD traits and between the conditions and mother avoidance in predicting leaving intention became non-significant. Bootstrapping or Monte Carlo method are recommended for future studies for internal validity.

The final limitation includes the generalization of the findings. The current study was conducted among battered women with childhood trauma who are predominantly

white. The results, therefore, may not be generalizable to non-white females, who tend to experience domestic violence victimization and adverse childhood experiences (CDC, 2020; CDC, 2021b; WHO, 2012). Futures studies should conduct with marginalized women and consider potential confounding roles of cultural differences. In addition, the current findings may not refer to battered males with childhood trauma as gender differences may impact TIM effectiveness. Although women are more prone to domestic violence victimization than men (CDC, 2020; WHO, 2012), testing TIM effectiveness among battered men with childhood trauma may provide a holistic picture of the intervention's effectiveness. As both men and women can be abusers in DV (Loving & Sbarra, 2015), future studies may adjust TIM to fit readers who are abusers (e.g., psychoeducation of childhood trauma impacts on one's tendencies to use violence with an intimate partner) and test its effectiveness.

To increase consistency across studies and internal validity, future research may assess information processing patterns using explicit measures, such as the Need for Cognition (Cacioppo & Petty, 1982) and Faith Intuition Scales (Epstein et al., 1996) in the current study, in addition to implicit tasks, such as Stroop tasks and eye-tracking (Arntz et al., 2000; Keiser et al., 2017; Preissler et al., 2010; Thome et al., 2016). Understanding whether people's self-reports of their thinking patterns and their automatic information processing are aligned may inform future interventions regarding the type of thinking patterns and vulnerable recipients to prioritize increasing TIM effectiveness. The current research's explicit measurement of information processing revealed consistent results with studies using implicit measures (Arntz et al., 2000; Preissler et al., 2010; Thome et al., 2016), which are cognitive tendencies among avoidant women and

experiential predispositions among anxious women. The findings from the explicit measures extended existing research into a new aspect. Natural information processing tendencies of trauma-driven psychosocial traits can be adaptive or maladaptive across types of social information (e.g., words in Stroop tasks versus TIM). Future studies using implicit measures to assess information processing among individuals with childhood trauma may utilize trauma-informed texts. Studies with explicit information processing measures may apply trauma-informed short words in Stroop tasks to examine whether implicit and explicit measures provide consistent results.

Regarding external validity, studies may replicate the current research among inpatient participants with a rigid safety protocol. The process potentially yields larger effect sizes regarding the correlations between TIM and domestic violence attitudes because inpatient individuals might be clinically sensitive towards trauma-related information. If inpatients are a research sample, future research should ensure that licensed psychologists are presented during the intervention to avoid potential impacts on clinically sensitive populations despite TIM safety in the current study. Individuals with childhood trauma likely have basal negative mood states (Bortolla et al., 2020; Carpenter & Trull, 2013; Soloff, White, Omari, Ramaseshan, & Diwadkar, 2015). Future research should control for emotional baselines that may interfere with TIM processing.

Despite the limitations, the current findings could be the initial guideline of trauma-informed communication at a larger scale, such as trauma-informed messages on emerging media (e.g., virtual reality) or social media platforms (e.g., Facebook posts, podcasts). As messages and media are inseparable components of communication in the digital era, future studies may test the effectiveness of TIM as a Facebook post to

examine the intervention effectiveness relative to simply presenting TIM as in the current research. Social media provide a sense of belonging to a community and social connections (Moorhead et al., 2013) and may increase TIM effectiveness in predicting some attitudinal aspects, such as perceived social support among battered women with childhood trauma. Trauma-informed agents on a social virtual reality platform, such as Second Life, could be an alternative to scale up TIM. Social agents may interact with battered women utilizing the current effective components, including psychoeducation, empowerment, and providing empathetic safety plans. With the interactive nature of emerging media, battered women may be asked to design their personalized safety plan with the virtual agent's facilitation to increase the effectiveness of empathetic safety plans in trauma-informed communication. Future studies may assess the omitted outcomes in the current research, such as the perceived trustworthiness of virtual agents and perceived social support relative to interpersonal discussions with a medical professional in a clinical setting.

Finally, CEST posited that the experiential and cognitive routes could coexist on a spectrum (Epstein, 1992). Although TIM effectiveness is pronounced among a) cognitive, avoidant women and b) experiential, anxious women, the experiential system among avoidant individuals and the cognitive system among anxious individuals are not necessarily dysfunctional. Avoidant women may initially respond to attachment-related information, such as TIM, via their experiential route as a human default mode but then suppress relevant emotions and utilize cognitive processing to avoid emotional pain (Epstein, 2012). In other words, cognitive information processing can correct ongoing experiential operation with one's conscious effort to admit or avoid feelings (Liu et al.,

2017). In the same way, anxious individuals may initially or simultaneously process TIM via their cognitive route, although relevant cognitions could less influence their DV attitudes due to sensitivities towards external emotional cues as a core feature of anxious attachment (Dykas & Cassidi, 2011; Epstein, 2012). Future studies may examine the multi-moderating roles of cognitive and experiential information processing to understand TIM effectiveness via a CEST perspective.

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APPENDICES

APPENDIX A: EXPERIMENTAL STIMULI

Below are the experimental stimuli in the current study. Condition 1 addresses conventional domestic violence messages (441 words). Condition 2 addressed trauma-informed domestic violence messages (805 words). The highlighted parts in Condition 2 emphasize trauma-informed components not included in Condition 1.

Condition 1: Conventional Domestic Violence Messages

What does being in an abusive relationship feel like? In the beginning, it was magical. He was sweet, funny, and caring. The honeymoon phase, however, did not last long. I found myself not being able to reason with him. He would blame me regardless of what has happened between us. Things were unstable. His promises were constant, but they would never be true. My everyday life was full of false hope and many lies from him. Months in, everything I did was a problem in his eyes. He did not like how I felt, how I dressed, or even how I talked to people. He would call me a slut for talking to other male friends. I have cried alone and kept questioning myself; what did I do wrong? Things between him and I got worse to the point that I was physically hurt and sometimes was forced to have sex with him. I was devastated. Whenever I tried to leave him, he would make me feel that he regretted his actions and wanted to improve.

I finally managed to end the relationship after several attempts. It was hard, but I did it. I spent the time when he was physically away looking up online resources. The National Domestic Violence Hotline Website (thehortline.org) is a useful one. I have used their 24-7 online chat service, which allowed me to get help without verbally mentioning the abuse. They provided specialists to help women in creating their safety

exist plan if calling 1-800-799-7233. I cut off contact with my ex, blocking his number and social media accounts. I went to see a counselor, which helped me to process my feelings, thoughts, fears. I have practiced self-love and surrounded myself with nice and genuine people. Time heals all wounds, and I found happiness again. If you are experiencing what I did, please ask for help from people you trust, local shelters, a therapist, or a police officer if your partner could potentially harm you. You deserve to live a loving and abuse-free life.

Condition 2: Trauma-Informed Domestic Violence Messages

What does being in an abusive relationship feel like? In the beginning, it was magical. He was sweet, funny, and caring. **Growing up in a loud and angry household, I did not realize his gentleness was something for which I was desperate.** The honeymoon phase, however, did not last long. I found myself not being able to reason with him. He would blame me regardless of what has happened between us. Things were unstable. His promises were constant, but they would never be true. My everyday life was full of false hope and many lies from him. Months in, everything I did was a problem in his eyes. He did not like how I felt, how I dressed, or even how I talked to people. He would call me a slut for talking to other male friends. I have cried alone and kept questioning myself; what did I do wrong? **Looking back now, I knew I did nothing wrong. I was conditioned to be familiar with abuse. Like my partner, my parents called me names and screamed at me over minor issues. Living like that for years, I thought abuse was normal. I never learned how a healthy family and relationship should be.** Things between him and I got worse to the point that I was physically hurt

and sometimes was forced to have sex with him. I was devastated. Whenever I tried to leave him, he would make me feel that he regretted his actions and wanted to improve.

I finally managed to end the relationship after several attempts. It was hard, but I did it. I spent the time when he was physically away looking up online resources. The National Domestic Violence Hotline Website (thehortline.org) is a useful one. I have used their 24-7 online chat service, which allowed me to get help without verbally mentioning the abuse. They provided specialists to help women in creating their safety exist plan if calling 1-800-799-7233**. I sometimes wanted to get back with my ex and forgive him. However, I realized that those thoughts were just a pattern from my childhood: forgiving the abusers for surviving.**

I know the abuse I experienced is not my fault, and I can regain control over my life. I cut off contact with my ex, blocking his number and social media accounts. I went to see a counselor, which helped me process my feelings, thoughts, fears, **and discover the impacts trauma has on my life. Besides my relationship with the ex, trauma has impacted my physical health. My body under chronic stress was programmed to be constantly fighting back the stressor. When I experienced a reminder of my childhood, such as a loud noise or the feeling of not being loved, my stomach would curl badly. My parents' emotional instability impacted my mental health. It made me hypervigilant and not trusting. I often imagined people feeling annoyed by my existence as my parents did.**

Nonetheless, I did not let those physical and emotional barriers stop me from living my fullest life. When I felt physically or emotionally triggered, such as calling my ex, I took a deep breath instead of calling him. I told myself that the urge was

how my brain and body were conditioned to respond to a trauma trigger and the feeling would soon pass. I have practiced self-love and surrounded myself with nice and genuine people. Time heals all wounds, and I found happiness again. **Trauma may leave its mark, but it cannot destroy who I am**. If you are experiencing what I did, please ask for help from people you trust, local shelters, a therapist, or a police officer if your partner could potentially harm you. You deserve to live a loving and abuse-free life. **There is happiness after abuse. You and I will be the living proof.**

APPENDIX B: MEASUREMENT

Start of Block: Introduction

I am a researcher from the University of Oregon and am researching women's relationships and childhood. If you are female aged 18-60 years old and have some concerns about your intimate relationships, please consider joining the study. Your response is anonymous, and your participation is voluntary. You can quit the survey anytime that you are inconvenient by closing the tab. The initial survey should take 2-4 minutes to complete.

End of Block: Introduction

Start of Block: Prescreening demographics

Are you a female aged 18-60 years old?

- ○ Yes
- ○ No

Are you currently in or have been in a woman shelter in the past six months?

- ○ Yes
- ○ No

Are you currently an inpatient (staying in a hospital while under treatment) or an outpatient (receiving medical treatment without being admitted to a hospital) of a psychiatric clinic or hospital?

- ○ Yes
- ○ No

End of Block: Prescreening demographics

Start of Block: Prescreening adverse childhood experiences

Instruction: Select "Yes" or "No" for each of the following.

While you were growing up, during your first 18 years of life:

Did a parent or other adult in the household often swear at you, insult you, put you down, or humiliate you? or Act in a way that made you afraid that you might be physically hurt?

- ○ Yes
- ○ No

Did a parent or other adult in the household often push, grab, slap, or throw something at you? or Ever hit you so hard that you had marks or were injured?

- ○ Yes
- ○ No

Did an adult or person at least five years older than you ever touch or fondle you or have you sexually touch their body? Or Attempt or have oral, anal, or vaginal intercourse with you?

- ○ Yes
- ○ No

Did you often feel that no one in your family loved you or thought you were important or special? or Your family did not look out for each other, feel close to each other, or support each other?

- ○ Yes
- ○ No

Did you often feel that you did not have enough to eat, had to wear dirty clothes, and had no one to protect you? or Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?

- ○ Yes
- ○ No

Were your parents ever separated or divorced?

- ○ Yes
- ○ No

Was your mother or stepmother often pushed, grabbed, slapped, or had something thrown at her? or Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard? or Ever repeatedly hit at least a few minutes or threatened with a gun or knife?

- ○ Yes
- ○ No

Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?

- ○ Yes
- ○ No

Was a household member depressed or mentally ill, or did a household member attempt suicide?

- ○ Yes
- ○ No

Did a household member go to prison?

- ○ Yes
- ○ No

End of Block: Presrcreening adverse childhood experiences

Start of Block: Prescreening fear of a current partner

Instruction: Please answer the following question about your current romantic relationship using the "Yes" or "No" response option. If you are not currently dating anyone, please answer the questions by thinking about your recent ex-partner.

In the past six months, a partner has made you feel afraid or unsafe.

- ○ Yes
- ○ No

In the past six months, a partner has followed you or harassed you over the telephone or online.

- ○ Yes
- ○ No

In the past six months, a partner has called you names, humiliated, bullied or criticized her, or threatened you in any way.

- ○ Yes
- ○ No

In the past six months, a partner has isolated you from your family and friends or restricted your behavior in any way.

- ○ Yes
- ○ No

In the past six months, a partner has physically harmed you in any way.

- ○ Yes
- ○ No

In the past six months, a partner has forced you to do sexual things you did not want to.

- ○ Yes
- ○ No

End of Block: Prescreening fear of a current partner

Start of Block: Qualified participation

You are qualified for my further study. Please consider joining my follow-up study by clicking the next button at the end of this page. You will be granted a 2-dollar bonus for your participation after five business days. Your participation is voluntary, and you may quit anytime that you feel uncomfortable. If you consider joining my additional survey, please proceed to the consent form on the next page. The study should take 15-25 minutes to complete. At the end of the survey, you will receive a code. Please enter the code through the MTurk system to get the 2-dollar bonus.

End of Block: Qualified participation

Start of Block: Consent form

You are being asked to participate in a research study. The box below highlights key information about this research for you to consider when deciding whether or not to participate. Carefully consider this information and the more detailed information provided below the box. Please ask questions about any of the information you do not understand before you decide whether to participate.

Key Information for You to Consider
• **Voluntary Consent**. You are being asked to volunteer for a research study. It is up to you whether you choose to participate or not. There will be no penalty or loss of benefits to which you are otherwise entitled if you choose not to participate or discontinue participation. • **Purpose**. The purpose of this research is to explore the effects of reading a story about a female survivor of an intimate abusive relationship on women's attitudes towards the topic. • **Duration.** It is expected that your participation will last 15-20 minutes. • **Procedures and Activities.** You will be asked to read a story and fill out a questionnaire. • **Risks.** The risk in participating is no greater than minimal risk of harm or what would be expected in everyday life. The experimental stimuli are based on publically available stories associated with abusive relationships. • **Alternatives.** Participation is voluntary, and the only alternative is not to participate.

Who is conducting this research?
The researcher(s) Karikarn Chansiri and Autumn Shafer from the University of Oregon are asking for your consent to this research.

Why is this research being done?
The purpose of the research is to examine women's attitudes towards intimate abusive relationships. You are being asked to participate because you are a woman ages 18 to 60 years old, is heterosexual, can understand and read English, is not a current psychiatric patient, and has not been in a woman shelter in the past six months.

What happens to the information collected for this research?
Information collected for this research will be used to guide future interventions associated with abusive relationships among women.

How will my privacy and data confidentiality be protected?
We will protect your privacy, including not asking you to provide any personal information that could be directly or indirectly connected to your identity. Despite taking steps to protect your privacy, we can never fully guarantee that your privacy will be protected.

Individuals and organizations that conduct or monitor this research may be permitted access to and inspect the research records, including access to your survey responses, which will be encrypted as a computer file. These individuals and organizations include Karikarn Chansiri and Autumn Shafer from the University of Oregon.

What are the risks if I participate in this research?
The study presents no more than minimal risk of harm or any discomforts to subjects during the survey process (including reading a story of a female survivor of an intimate abusive relationship and filling out the survey).

What if I want to stop participating in this research?
Taking part in this research study is your decision. Your participation in this study is voluntary. You do not have to take part in this study, but you can stop at any time if you do. You have the right to choose not to participate in any study activity or completely withdraw from continued participation at any point in this study without penalty or loss of benefits to which you are otherwise entitled. Your decision whether or not to participate will not affect your relationship with the researchers or the University of Oregon.

Will it cost me money to take part in this research?

You will not be costed from participation.

Will I be paid for participating in this research?

You will be paid $2 for participation through the MTurk system.

Who can answer my questions about this research?
If you have questions, concerns, or have experienced a research-related injury, contact the research team at:

Karikarn Chansiri
424-324-1234
Karikarn@uoregon.edu

An Institutional Review Board ("IRB") is overseeing this research. An IRB is a group of people who perform an independent review of research studies to ensure the rights and welfare of participants are protected. UO Research Compliance Services is the office that supports the IRB. If you have questions about your rights or wish to speak with someone other than the research team, you may contact:

Research Compliance Services
5237 University of Oregon
Eugene, OR 97403-5237
(541) 346-2510

STATEMENT OF CONSENT
I have had the opportunity to read and consider the information in this form. I understand that I can ask additional questions throughout my participation by emailing or calling the researcher(s).
I understand that by checking the 'I agree to participate in this research project' box below, I volunteer to participate in this research. I understand that I am not waiving any legal rights. I understand that if my ability to consent or assent for myself changes, my

legal representative or I may be asked to re-consent before my continued participation in the study. I understand that I may check the box 'I decline to participate in this research project' if I choose not to participate in the study.

- [ ] I agree to participate in this research project
- [ ] I decline to participate in this research project

End of Block: Consent form

Start of Block: Browse history instruction

As your safety is important, we highly encourage you to delete your browsing history and NOT to use an electronic device where your partner could potentially witness your participation in the study or access your internet history. Please select the device you are currently using to read instructions on how to delete your browsing history.

- ○ MacBook
- ○ iPhone or iPad
- ○ Windows
- ○ Android

End of Block: Browse history instruction

Start of Block: Android

This page provided the instruction on how to delete browsing history for Android users. Please scroll down to see the instruction for the browser that you are currently using.

If you use Chrome

Step 1. Open the Chrome app.
Step 2. At the top right, tap More
Step 3. Select **History**. If your address bar is at the bottom, swipe up on the address bar.
Step 4. Tap History. Tap **Clear browsing data**.
Step 5. Next to the **Time range,** select how much history you want to delete. You may

select **Last Hour**, which is to cover the time of your participation in the study.
Step 6. Check **Browsing history** and any other data you may want to delete. Tap **Clear data**. *Source of information: https://support.google.com/chrome/*

If you use Mozilla Firefox

Step 1. Open the Firefox app.
Step2. Tap the button and then select **History**.
Step 3. Tap **Clear Browsing History.** Click **OK**.

Source of information: https://support.mozilla.org/

End of Block: Android

Start of Block: Windows

This page provides the instruction on how to delete browsing history for Windows users. Please scroll down to see the instruction of the browser that you are currently using.

If you use Google Chrome
Step 1. On your computer, open Chrome.
Step 2. At the top right, click **More**.
Step 3. Click **History** On the left, click **Clear browsing data**, and then a box will appear.
Step 4. From the drop-down menu, select how much history you want to delete.
Step 5. Check the boxes for the info you want Chrome to clear, including **Browsing History**
Step 6. Click **Clear data**.

Source of information: https://support.google.com/chrome

If you use Mozilla Firefox

Step 1. Click the Library button, click **History**, and then click **Clear Recent History**.
Step 2. Select how much history you want to clear by clicking the drop-down menu next

to the **Time range**. You may select **Last Hour**, which is to cover the time of your participation in the study.

Step 3. Use the checkboxes to select what information you want to clear from your history. Please make sure to choose **Browsing & Download History.**

Step 4. Click the **OK** button.

Source of information: https://support.mozilla.org

If you use Microsoft Edge

Step 1. In Microsoft Edge, select the **Tools** button.
Step 2. Select **History** and click **Clear browsing data.**
Step 3. From the drop-down menu, select how much history you want to delete. You may select **Last Hour,** which is to cover your participation in the study.
Step 5. Check the boxes for the info you want the browser to clear, including **Browsing History**.
Step 6. Choose the types of data or files you want to remove from your PC, and then select **Clear Now**.

Source of information: https://support.microsoft.com.

End of Block: Windows

Start of Block: iPhone or iPad

This page provides the instruction of how to delete browsing history for iPhone or iPad users. Please scroll down to see the instruction for the browser that you are currently using. ***If you use Google Chrome***
Step 1. Open the Chrome app,
Step 2. Tap **More**, which may be at the bottom or the top right of your screen.
Step 3. Select **History**.
Step 4. At the bottom, tap **Clear Browsing Data**.
Step 5. Select **Browsing history.** You may check any other items you delete.
Step 6. Tap **Clear Browsing Data**. At the top right, tap **Done**.
Source of information: https://support.google.com/chrome

If you use Mozilla Firefox
Step 1. Tap the menu button at the bottom of the screen. The menu will at the top-right if you use an iPad.
Step 2. Tap **Your Library**
Step 3. Tap the history panel to see your visited sites.

Step 4. Tap **Clear Recent History.**
Step 5. Select the time frame you want to be cleared.
Source of information: https://support.mozilla.org/en-US/kb/clear-browsing-history-firefox-ios

If you use Safari

Step 1. To clear your history and cookies, go to **Settings**, then click **Safari.**
Step 2. Tap **Clear History and Website Data**.

Step 3. Select **Clear.**
Source of information: https://support.apple.com

End of Block: iPhone or iPad

Start of Block: Macbook

This page provides the instruction of how to delete browsing history for MacBook users. Please scroll down to see the instruction for the browser that you are currently using.

If you use Apple Safari

Step 1: Open Safari. In the menu bar, select **History** and click **Clear History.**
Step 2: On the left sidebar, select **Clear Browsing Data**.
Step 3: Select the time frame of data to delete. You may select **The Last Hour. Click Clear History**.

If you use Google Chrome

Step 1: Select **History** at the menu bar and click **Show Full History**.
Step 2: On the left sidebar, select **Clear Browsing Data**.

Step 3: Select the time frame of data to delete. You may select **Last Hour.** Please make sure to check the box of **Browsing History**. You can delete cookies and any images or files if you would like.

If you use Mozilla Firefox

Step 1: Open Mozilla Firefox. In the menu, select **History** and then **Clear Recent History**.
Step 2: Select a time range to clear. You may select **Last Hour.** Please make sure to

check the box of **Browsing & Downloaded History** to delete your browsing information. You may also check the box of other items you would like to clear.
Source of Information: https://www.softwarehow.com/delete-history-mac/ by Nicole Pav (2019)

End of Block: Macbook

Start of Block: Trigger warning and resources

Now that you deleted your browsing history, I would like to let you know before the study begins that IF YOU ARE in a dangerous situation with your intimate relationship, you must talk to someone you trust. Those people could be a friend, family member, your GP (general practitioner/family doctor), or the police.

Tell them what you have been experiencing in your relationship. There is a national counseling hotline: 1-800-799-7233 that you can call anonymously for advice. They also have the website: https://www.thehotline.org, which provides an online chat service. You may contact your local women's shelter. If you feel unsafe that you might be being monitored during your participation time, please do not hesitate to exit the study page. For an emergency, please call 911.

End of Block: Trigger warning and resources

Start of Block: Information processing tendencies

Instruction: Please rate how true are the following statements.

I do not like to have to do much thinking.

- ○ Definitely false
- ○ Probably false
- ○ Neither true nor false
- ○ Probably true
- ○ Definitely true

I try to avoid situations that require thinking in depth about something.

- ○ Definitely false
- ○ Probably false
- ○ Neither true nor false
- ○ Probably true
- ○ Definitely true

I prefer to do something that challenges my thinking abilities rather than something that requires little thought.

- ○ Definitely false
- ○ Probably false
- ○ Neither true nor false
- ○ Probably true
- ○ Definitely true

I prefer complex to simple problems.

- ○ Definitely false
- ○ Probably false
- ○ Neither true nor false
- ○ Probably true
- ○ Definitely true

Thinking hard and for a long time about something gives me little satisfaction.

- ○ Definitely false
- ○ Probably false
- ○ Neither true nor false
- ○ Probably true
- ○ Definitely true

I trust my initial feelings about people.

- ○ Definitely false
- ○ Probably false
- ○ Neither true nor false
- ○ Probably true
- ○ Definitely true

I believe in trusting my hunches.

- ○ Definitely false
- ○ Probably false
- ○ Neither true nor false
- ○ Probably true
- ○ Definitely true

My initial impressions of people are almost always right.

- ○ Definitely false
- ○ Probably false
- ○ Neither true nor false
- ○ Probably true
- ○ Definitely true

When it comes to trusting people, I can usually rely on my "gut feelings."

- ○ Definitely false
- ○ Probably false
- ○ Neither true nor false
- ○ Probably true
- ○ Definitely true

I can usually feel when a person is right or wrong even, although I cannot explain how I know.

- Definitely false
- Probably false
- Neither true nor false
- Probably true
- Definitely true

End of Block: Information processing tendencies

Start of Block: Borderline personality traits

Instruction: Please select 'True' or 'False' for the following statements.

Have you frequently felt unreal or as if things around you were unreal?

- True
- False

Have you had at least two other problems with impulsivity (e.g., eating binges and spending sprees, drinking too much, and verbal outburst)?

- True
- False

Have you chronically felt empty?

- ○ True
- ○ False

Have any of your closest relationships been troubled by a lot of arguments or repeated breakups?

- ○ True
- ○ False

Have you often felt that you had no idea of who you are or that you have no identity?

- ○ True
- ○ False

Have you deliberately hurt yourself physically (e.g., punched yourself, cut yourself, burned yourself)?

- ○ True
- ○ False

Have you been extremely moody?

- ○ True
- ○ False

Have you made desperate efforts to avoid feeling abandoned or being abandoned (e.g., repeatedly called someone to reassure yourself that he or she still cared, begged them not to leave you, clung to them physically)?

- ○ True
- ○ False

Have you ever made a suicide attempt or, on more than two occasions, threatened suicide?

- ○ True
- ○ False

Have you often been distrustful of other people?

- ○ True
- ○ False

End of Block: Borderline personality traits

Start of Block: Attachment styles

Instruction: Please answer the following questions about your mother or a mother-like figure.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I usually discuss my problems and concerns with this person.	○	○	○	○	○
I talk things over with this person.	○	○	○	○	○
It helps to turn to this person in times of need.	○	○	○	○	○
I find it easy to depend on this person.	○	○	○	○	○
I prefer not to show this person how I feel deep down.	○	○	○	○	○
I do not feel comfortable opening up to this person.	○	○	○	○	○
I am afraid this person may abandon me.	○	○	○	○	○

I am worried that this person will not care about me as much as I care about him or her.	○	○	○	○	○
I often worry that this person does not care for me.	○	○	○	○	○

Page Break

Instruction: Please answer the following questions about your **father** or **a father-like figure**.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I usually discuss my problems and concerns with this person.	○	○	○	○	○
I talk things over with this person.	○	○	○	○	○
It helps to turn to this person in times of need.	○	○	○	○	○
I find it easy to depend on this person.	○	○	○	○	○
I prefer not to show this person how I feel deep down.	○	○	○	○	○
I do not feel comfortable opening up to this person.	○	○	○	○	○
I am afraid this person may abandon me.	○	○	○	○	○

I am worried that this person will not care about me as much as I care about him or her.	○	○	○	○	○
I often worry that this person does not care for me.	○	○	○	○	○
Please check Strongly disagree if you are reading this statement.	○	○	○	○	○

Page Break

End of Block: Attachment styles

Start of Block: Trigger warning

Please read the following story carefully and answer some questions related to the story afterward. Please note that the story is related to abusive relationships. The content may be sensitive and create uncomfortable feelings for some women. You may choose to quit the study if you are uncomfortable. For help related to domestic violence, please contact 1-800-799-7233 for a national counseling hotline or call 911 for an emergency. You may contact your local shelter or use an online chat service on the website: http://www.thehotline.org. If you feel unsafe during the study, please do not hesitate to exit the study page. You will still receive the participation incentive despite dropping off from the study.

End of Block: Trigger warning

Start of Block: Condition: Trauma-informed messages

What does being in an abusive relationship feel like? In the beginning, it was magical. He was sweet, funny, and caring. Growing up in a loud and angry household, I did not realize his gentleness was something for which I was desperate.

The honeymoon phase, however, did not last long. I found him difficult to reason with. He would blame me regardless of what had happened between us. Things were so unstable. His promises were constant, but they would never be true. Months in, everything I did was a problem in his eyes. He did not like how I felt, the way I dressed, or even how I talked to people. He insulted me for talking to other male friends. I cried alone and kept questioning myself; what did I do wrong?

Page Break

Looking back now, I knew I did nothing wrong. I was conditioned to be familiar with abuse. Like my partner, my parents called me names and screamed at me over minor issues. Living like that for years, I thought abuse was normal. I never learned how a healthy family and relationship should be. Things between him and I got worse to the point that he physically hurt me, and I sometimes was forced to have sex with him. I was devastated. Whenever I tried to leave him, he would convince me that he regretted his actions and wanted to improve.

I finally managed to end the relationship after several attempts. It was hard, but I did it. I spent the time that he was physically away looking up online resources. The National Domestic Violence Hotline Website (thehotline.org) is a useful one. I have used their 24-7 online chat service, which allowed me to get help without verbally mentioning the abuse. They provided specialists to help women like me create their safety plan by calling 1-800-799-7233.

I sometimes wanted to get back with my ex and forgive him. However, I realized that those thoughts were just a pattern from my childhood: forgiving the abusers for surviving. I know the abuse I experienced is not my fault, and I can regain control over my life. I cut off contact with my ex, blocking his number and social media accounts. I went to see a counselor, which helped me process my feelings, thoughts, fears, and discover the impacts trauma has had on my life.

Page Break

Besides my relationship with the ex, trauma has impacted my physical health. My body under chronic stress was programmed to be constantly fighting back the stressor. When I experienced a reminder of my childhood, such as a loud noise or the feeling of not being loved, my stomach would curl badly. My parents' emotional instability impacted my mental health. It made me hypervigilant and not trusting. I often imagined people feeling annoyed by my existence as my parents did.

Nonetheless, I did not let those physical and emotional barriers stop me from living my fullest life. When I felt physically or emotionally triggered, such as calling my ex, I took a deep breath instead of calling him. I told myself that the urge was just how my brain and body were conditioned to respond to a trauma trigger and that the feeling would soon pass. I have practiced self-love and surrounded myself with kind and genuine people. Time heals all wounds, and I found happiness again.

Page Break

If you are experiencing what I did, please ask for help from people you trust, local shelters, a therapist, or a police officer if your partner could potentially harm you. If you have similar childhood experiences to mine, it may be challenging to make a tough safety decision, such as putting a restraining order on someone you love. This is normal because we were conditioned to tolerate and not let go of abuse.

I have three steps that could empower you to leave the relationship safely. First, make a safety plan that you are confident in achieving. I identified ways to escape the house and searched for a new apartment to move into when I was ready to leave the relationship and start my healing. The second step is to find support for your safety plan. I created a safety code with friends and let them know I am in danger if I text them the code. The last step is to make sure the plan will not impact other areas of your life. I moved to a new apartment, but I did not move to a new town because I loved my job.

You deserve to live a loving and abuse-free life. Trauma may leave its mark, but it cannot destroy who we are. You and I will be the living proof.

End of Block: Condition: Trauma-informed messages

Start of Block: Condition: Control messages

What does being in an abusive relationship feel like? In the beginning, it was magical. He was sweet, funny, and caring.

The honeymoon phase, however, did not last long. I found him difficult to reason with. He would blame me regardless of what has happened between us. Things were so unstable. His promises were constant, but they would never be true. Months in, everything I did was a problem in his eyes. He did not like how I felt, the way I dressed, or even how I talked to people. He insulted me for talking to other male friends. I cried alone and kept questioning myself; what did I do wrong?

Things between him and I got worse to the point that he physically hurt me, and I sometimes was forced to have sex with him. I was devastated. Whenever I tried to leave him, he would convince me that he regretted his actions and wanted to improve.

I finally managed to end the relationship after several attempts. It was hard, but I did it. I spent the time that he was physically away looking up online resources. The National Domestic Violence Hotline Website (thehotline.org) is a useful one. I have used their 24-

7 online chat service, which allowed me to get help without verbally mentioning the abuse. They provided specialists to help women in creating their safety exist plan if calling 1-800-799-7233.

I cut off contact with my ex, blocking his number and social media accounts. I went to see a counselor, which helped me process my feelings, thoughts, and fears. I have practiced self-love and surrounded myself with kind and genuine people. Time heals all wounds, and I found happiness again.

If you are experiencing what I did, please ask for help from people you trust, local shelters, a therapist, or a police officer if your partner could potentially harm you.

You deserve to live a loving and abuse-free life.

End of Block: Condition: Control messages

Start of Block: Manipulation and attention check

What is the story that you just read about?

- ○ A woman and her intimate abusive relationship
- ○ A woman, her intimate abusive relationship, and the abusive relationship with her parents
- ○ A woman and her child custody
- ○ A woman and her toxic supervisor

What is the organization that was mentioned in the story?

- ○ hotline.org
- ○ CDC
- ○ The World Health Organization
- ○ NIH

How is the relationship between the woman in the story and her family of origin (i.e., her parents)?

- ○ They have a healthy relationship
- ○ She did not mention her parents
- ○ The relationship has been abusive
- ○ She did not grow up with her parents

Please rate the length of the story that you just read.

- ○ Too short
- ○ Short
- ○ Good length
- ○ Long
- ○ Too long

End of Block: Manipulation and attention check

Start of Block: Trauma knowledge

Instruction: Please rate your agreement on the following statements associated with the story you just read.

After reading the story, I have the opportunity to learn how childhood trauma and abuse impact responses in the body.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

After reading the story, I have the opportunity to learn how childhood trauma and abuse affect peoples' mental health.

- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Strongly agree

The story creates opportunities for me to learn how childhood trauma and abuse affect peoples' relationships.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I am learning more about handling unexpected reminders of childhood trauma and abuse I may have endured.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

End of Block: Trauma Knowledge

Start of Block: Prescreening for leaving intention

Are you currently in a romantic relationship?

- ○ Yes
- ○ No
- ○ Prefer not to answer

End of Block: Prescreenong for leaving intention

Start of Block: Intention to return to the abusive relationship

How likely are you planning to get back with your recent ex-partner within the next year?

- ○ Extremely unlikely
- ○ Somewhat unlikely
- ○ Neither likely nor unlikely
- ○ Somewhat likely
- ○ Extremely likely

End of Block: Intention to return to the abusive relationship

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Start of Block: Leaving intention

How likely do you intend to end the relationship with your current partner?

- ○ Extremely unlikely
- ○ Somewhat unlikely
- ○ Neither unlikely nor likely
- ○ Somewhat likely
- ○ Extremely likely

End of Block: Leaving intention

Start of Block: Domestic violence coping efficacy

Instruction: Think about your current romantic relationship or your most recent romantic relationship that has ended if you do not have a current partner.
Please rate your perceived capability RIGHT NOW in several aspects of the relationship on a 1-100 visual analog scale.

O refers to "not at all capable," and 100 refers to "totally capable."

Feeling good about myself.	
Managing feelings of grief, loss, and abandonment.	
Managing my housing, food, clothes, and medical needs.	
Managing feelings of depression and/or suicidal thoughts.	
Handling feelings of hopelessness and helplessness	
Controlling thoughts that I am going crazy.	
Managing my feelings of guilt and self-blame about bad behaviors from my romantic partner.	
Handling fears of being alone.	
Handling feelings of anger/rage at my romantic partner.	
Managing my desire to have closure of my relationship with my romantic partner.	
Controlling feelings of anxiety and panic.	
Coping with loneliness and isolation.	
Dealing with nightmares/flashbacks concerning bad behaviors of my romantic partner.	
Coping with feeling completely overwhelmed with everything.	
Dealing with my anxiety about the future without my romantic partner.	
Controlling thoughts that "I just can't handle this."	
Being strong emotionally for people who love me.	
Managing my own spiritual pain.	
Trusting anyone.	

Dealing with feelings of sadness.	
Controlling negative thoughts about myself (for example, "I am stupid," "I am to blame," "I am a loser," "I screw-up everything," "I deserved to be attacked").	
Coping with the loss of the "good" aspects of my relationship with the partner who treated me badly.	
Coping with the feelings that family and friends just do not understand.	
Thinking that I am a competent woman.	
Dealing with feelings of shame concerning the bad behaviors of my romantic partner.	
Handling feelings of embarrassment	
Dealing with rejection from others.	
Handling feelings of inadequacy.	
Being able to concentrate and effectively handle my home, job, and parenting responsibilities.	
Coping with my appearance.	

End of Block: Domestic violence coping efficacy

Start of Block: Empowerment about safety

Instruction: Please rate the following statements about your feeling RIGHT NOW regarding your safety plan. Please think about the plan in the context of the relationship with your current partner or your recent ex-partner if you do not have a current partner.

I can cope with whatever challenges come at me as I work to keep safe.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I have to give up too much to keep safe.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I know what to do in response to threats to my safety.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I have a good idea about what kinds of support for safety I can get from people in my community (friends, family, neighbors, people in my faith community, etc.).

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I know what my next steps are on the path to keeping safe.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

Working to keep safe creates (or will create) new problems for me.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

When something does not work to keep me safe, I can try something else.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I feel comfortable asking for help to keep safe.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

If you are reading this, please select 'Somewhat disagree.'

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

When I think about keeping safe, I have a clear sense of my goals for the next few years.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

Working to keep safe creates (or will create) new problems for people I care about.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I feel confident in the decisions I make to keep safe.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

I have a good idea about what kinds of support for safety I can get from community programs and services.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

Community programs and services provide the support I need to keep safe.

- ○ Strongly disagree
- ○ Somewhat disagree
- ○ Neither agree nor disagree
- ○ Somewhat agree
- ○ Strongly agree

End of Block: Empowerment about safety

Start of Block: Demographics

What is your age?

- ○ 18-24 years old
- ○ 25-34 years old
- ○ 35-44 years old
- ○ 45-54 years old
- ○ 55-60 years old
- ○ Less than 18 or more than 60 years old

Please specify your race.

- ○ White
- ○ Hispanic or Latino
- ○ Black or African American
- ○ Native American or American Indian
- ○ Asian/Pacific Islander
- ○ Other

What is the highest degree of level of school you have completed? If you are currently enrolled, highest degree received.

- ○ Nursery school to 8th grade
- ○ High school graduate, diploma, or the equivalent (e.g., GED)
- ○ Bachelor's degree
- ○ Master's degree
- ○ Doctorate
- ○ Vocational training or professional degree

What is your marital status?

- ○ Single, never married
- ○ Married or domestic partnership
- ○ Widowed
- ○ Divorced
- ○ Separated

Are you currently...?

- ○ Employed for wages
- ○ Self-employed
- ○ Unemployed
- ○ A student
- ○ A homemaker
- ○ Retired

What is your individual incomes?

- ○ less than $20,000
- ○ $20,000 – $44,999
- ○ $45,000 - $139,999
- ○ $140,000-149,999
- ○ $149,9999

Do you have children?

- ○ Yes
- ○ No

What is your religion?

- ○ Buddhism
- ○ Jewish
- ○ Hindu
- ○ Christian
- ○ Muslim
- ○ Other
- ○ I am not religious

End of Block: Demographics

Start of Block: Random ID

Here is your ID: ${e://Field/Random%20IDII}

Copy this value to paste into MTurk. When you have copied this ID, please click the next button to complete your survey.

End of Block: Random ID

APPENDIX C: LINEAR ASSUMPTION VISUALIZATIONS

Figure 1. Linearity.

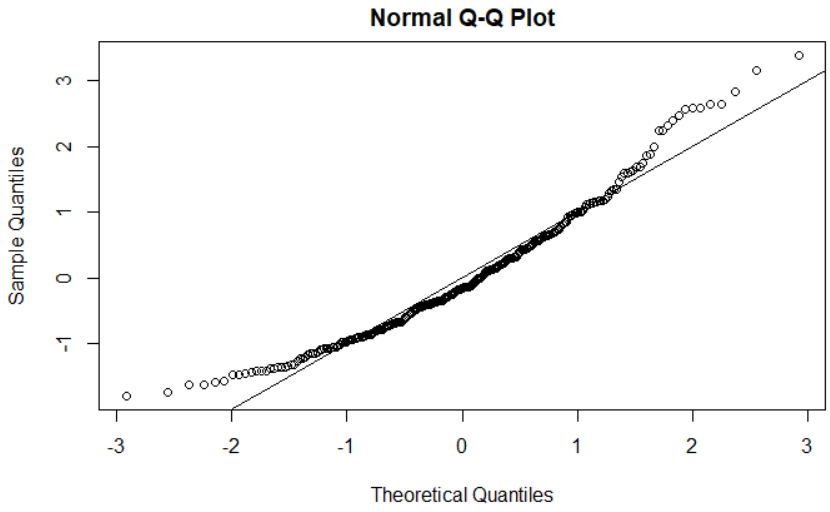


Figure 2. Normality.

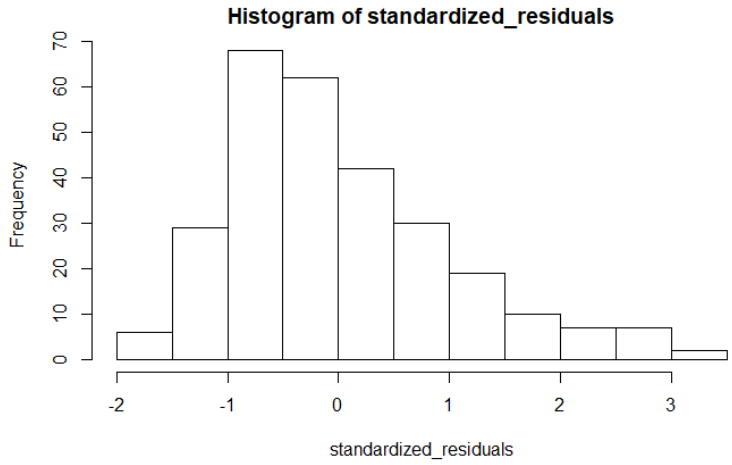
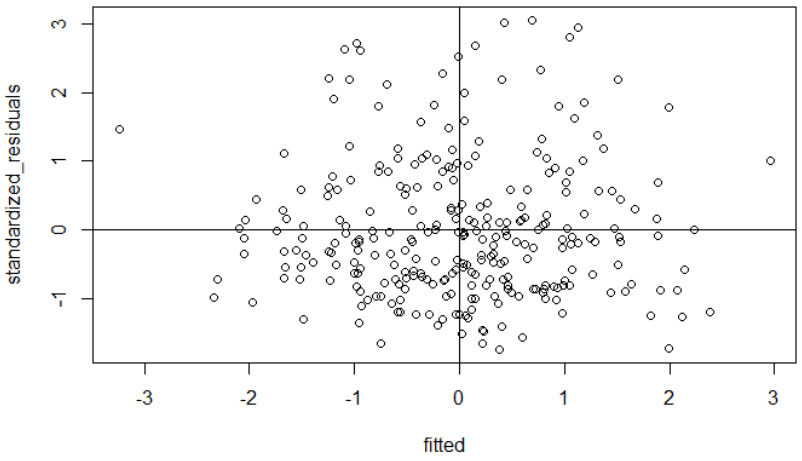


Figure 3. Heterodascecity and independence or errors.


standardized_residuals
3
2
1
0
-1
-3
-2
-1
0
1
2
3
fitted

APPENDIX D: ACRONYMS

ACE Adverse childhood experience

BPD Borderline personality disorder

CEST Cognitive Experiential Self Theory

DV Domestic violence

ELM Elaboration Likelihood Model

PTSD Post-traumatic stress disorder

TIC Trauma-informed care

TI-DV Trauma-informed domestic violence

MI Motivational interviewing

NFC Need for Cognition

FI Faith in Intuition

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