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Emotional and Attentional Regulation: Impact of Trauma and Journal Writing?

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Abstract

Traumatic experiences are very common and have a high lifetime prevalence rate, which a large body of research indicates negatively impact the ability to self-regulate, including emotional and attentional regulation. This study focused on traumatic experiences caused by peer victimization and aimed to examine the effects on self-regulation after exposure to artificial trauma and journaling in graduate students. A convenient sample of 9 graduate students were randomly assigned to the control or intervention group. All participants were asked to engage in a journaling activity after watching the assigned video. Three emotional Stroop tasks were administered to participants: before watching the assigned video, after watching the assigned video, and after journaling. The results suggest that after the exposure to artificial trauma, participants in the intervention group had quicker average response time (ART) across negative and neutral word types with 100% accuracy for negative words and lower average accuracy rate (AAR) for neutral and positive words. The control group had quicker ART and slightly lower AAR for negative words, slower ART, and slightly lower AAR to neutral words, and remained the same on positive words with increased AAR. The results also suggest that, after journaling, all participants had slower ART for negative words, and quicker ART for neutral and positive words; there were increases in AAR across all word types. These findings suggest that both trauma and journaling have short-term effects on attentional processing in the context of emotion and point to the potential promise of journaling in interventions to support self-regulation.

Keywords: self-regulation, trauma, journal writing, Stroop task

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Can adults be academically successful without self-regulation? Self-regulation in an educational setting is like oxygen to a beating heart and functioning brain. There is a plethora of studies (Djambazova-Popordanoska, 2016; Blair & Raver, 2015; Teisl & Cicchetti, 2008; Zimmerman & Schunk, 2001) completed to examine and understand self-regulation in an educational setting for children and adolescents. One such study found that self-regulation had greater influence on academic achievement than general intelligence (Blair & Raver, 2015). However, exposure to trauma is likely to threaten an individual's ability to self-regulate (Bardeen & Reed, 2010). There are also several studies that speak to the positive impact of journaling on mood, stress, and mental health (Lara, 2020; McGough, 2013; Kliwer, et al., 2011). These works also examine this interaction in school age children and undergraduate students. However, there is a lack of examination of how self-regulation is impacted by trauma and the experience of journaling in graduate students and/or non-traditional students. The purpose of the current study is to examine the effects on self-regulation after exposure to artificial trauma and journaling in graduate students.

Theoretical Framework

This study is guided by the findings of researchers Pennebaker and Beall (1986) and the development of the Written Emotional Disclosure Paradigm (WEDP). Journal writing is a personal experience that allows the transference of thoughts outside of the mind and reduces the overwhelming feelings of being in constant thinking. The premise of the WEDP is that writing about emotional experiences and stressful events increases overall physical and psychological well-being (Pennebaker & Beall, 1986). Given the opportunity to write about a traumatic event and the emotions associated with it creates conditions for improvement for short-term physical health and long-term psychological wellbeing (Pennebaker & Beall, 1986).

Literature Review

Attentional and Emotional Regulation

Self-regulation is an important cognitive concept, specifically emotional and attentional regulation (Zimmerman, 2002). Many studies have revealed how self-regulation skills can lead students to academic success in school regarding nature, origins, and especially development (Zimmerman & Schunk, 2001). Children will show poorer academic achievement when they are more easily distracted during learning. Students engaging in self-regulation practice typically also have higher motivation and higher achievement than those who are not (Ramdass & Zimmerman, 2011). People with higher levels of attentional control are better able to regulate and reduce negative emotions associated with traumatic stimuli (Bardeen & Read, 2010). Simultaneously, negative emotions associated with trauma tend to negatively impact people's attentional and emotional regulation (Bardeen & Read, 2010; Khanna et al., 2017). Children with better emotional regulation skills are considered to be more attentive and more academically advanced because they are able to focus their attention on the task and ignore distractions (Djambazova-Popordanoska, 2016). This point relates back to helping children find and learn ways to shift their attention and regulate their emotions appropriately during learning.

Trauma

Trauma & Self-Regulation. Emotional regulation is a developmental process in which individuals can understand his/her emotions, manage distress, and control emotional responses to internal and external stimuli (Barlow et al., 2017; Dvir et al., 2014; Ehring & Quack, 2010; Teisl & Cicchetti, 2008). Emotional regulation can be affected by facing life stressors or challenges (Burns et al., 2010; Dvir et al., 2014). Emotional development and regulation are important to help provide individuals with what they need to persevere through life stressors and challenges,

while allowing individuals to learn to their full potential (Mareschal et. al., 2013). For years researchers have studied self-regulation, specifically emotional regulation, and what can impact a person's emotional regulation.

For this study, the effects of trauma on emotional regulation will be observed. Trauma is important to study because “traumatic experiences are very common and have a lifetime prevalence rate of more than 60% in the general population,” (p. 104) as stated by Caparos and Blanchette (2014). Due to the high prevalence rate of experiencing trauma, it is more likely that many individuals have difficulties with self-regulation. Exposure to trauma, especially in early life, radically changes the way an individual process and prioritizes emotional information (Marusak et. al., 2015). Due to ethical principles, bullying/peer victimization was conceptualized as an ‘artificial trauma’ for the purposes of this study.

Peer Victimization & Bullying as Artificial Trauma. Peer victimization has been defined as “a form of interpersonal trauma associated with both immediate and long-term adverse effects on mental health and general well-being” (McIver et. al., 2018, p. 136). Peer victimization can take place at any point during an individual's lifetime, but the effects of peer victimization can last for years. Personal experiences with rejection and bullying can negatively affect an individual's psychological adjustment, as well as their overall wellness (Masten et. al., 2013). If adolescents experienced peer rejection and frequently witnessed others being bullied or rejected by peers, adolescents would have reduced negative feelings of victimization as they would believe victimization commonly happened to both themselves and others. On the other hand, if adolescents were frequently rejected by peers and bullied but did not witness it happening to others, more negative emotions regarding bullying would be developed due to believing this only happened to themselves (Matsen et. al., 2013). While peer acceptance and rejection are more

common during adolescence, the impact of witnessing peer rejection or bullying is likely to instill a permanent belief system in an individual (Burns, Jackson, & Harding, 2010), and these beliefs might later impact an individual's emotional regulation when controlling emotions during a negative situation.

Peer victimization is a good fit as 'artificial trauma' because there is an abundance of research that suggests peer victimization is associated with dysregulation, specifically emotional dysregulation (McIver et. al., 2018). Due to the potential long-term effects trauma can have on an individual and their emotional regulation, it is important to further expand research on this topic and find interventions or practices which can help to improve emotional regulation and decrease negative effects of trauma, as well as enhancing academic success.

Journaling

Reflective journaling offers the benefits of understanding and analyzing personal experiences and healing (Kelley et. al., 2015). The goal is not about skill but to provide a safe and open space to examine deep rooted emotions, experiences, and thoughts. A study of students with emotional and behavior disorders revealed that journaling was an outlet for assessing, reflecting, monitoring, and processing emotions (Lara, 2020). In essence, journaling helped to teach and/or improve social skills. The opportunity to freely divulge all thoughts and emotions without the fear any external person will read, provided the best situation for students to process without fear of punishment or consequences (Lara, 2020). It is important for students to have control and power of their journaling experience. Journaling is additionally considered a coping mechanism for those going through emotional turmoil (Lara, 2020; Pennebaker & Beall, 1986). Journaling in this study is defined as the free expression of all thoughts that can be written or drawn without any instruction. Individual journals were private and there was no expectation of

sharing. Journal writing is usually a prolonged experience that occurs multiple times in a week for 15 - 30 minutes for the duration of the intervention (Kliwer, et al., 2011; Pennebaker & Beall, 1986). Most interventions lasted a minimum of six weeks which seemed to be the minimal amount of time for an impact (Pennebaker & Beall, 1986).

Emotional Stroop Task

Stroop tasks are commonly used in many research studies to measure emotional or attentional regulation. Trauma is frequently looked at as an influencing factor of emotional regulation when completing Stroop tasks (Caparos & Blanchette, 2014; Wingenfeld et. al., 2011). This study used the emotional color word Stroop task to examine participants' emotional regulation before and after being exposed to negative or positive stimuli. The emotional color word Stroop task consists of presenting different words (positive, negative, or neutral) while displayed in different colors. Participants are asked to name the colors of words, by pressing buttons on a keyboard, while ignoring the meaning of the word. Longer or slower reaction times when responding to negative words compared to positive or neutral words are considered to be an indication of emotional dysregulation (Iffland et. al., 2019).

Caparos and Blanchette (2014) emphasized the use of the emotional Stroop task while studying trauma and personal experiences. In this study, it was believed that the impact emotional words had on an individual largely depended on personal experiences. If a word presented during the task was relevant to one's personal experiences, the stronger the effect was on an individual's emotional regulation (Caparos & Blanchette, 2014). These two studies highlight the use of emotional Stroop tasks when examining emotional regulation, and how well an individual can selectively filter out emotionally distracting stimuli. For this study, an

emotional color word Stroop task was used to assess emotional and attentional regulation when exposed to trauma and journaling.

Current Study

In summary, studies suggest that exposure to trauma and the lingering negative emotions associated with that traumatic experience reduces an individual's ability to self-regulate their emotion and attention. Additionally, studies suggest that journaling provides individuals the opportunity to explore emotions and heal, thereby improving ability to self-regulate emotion and attention. The association between trauma and emotional dysregulation, as well as the central role of regulation in academic learning and success creates a strong need for effective interventions to support individuals to regulate effectively. The current study seeks to answer the following questions: 1) What effect does trauma have on emotional and attentional regulation? 2) What effect does journaling have on emotional and attentional regulation? The hypotheses are: 1) Participants exposed to a negative emotional situation when compared to those exposed to a neutral/happy emotional situation will have decreased ability to self-regulate emotion and attention, 2) Exposure to journaling will increase ability to self-regulate emotion and attention.

Method

Sample

Participants for this study included 9 graduate students (3 male and 6 female) at midwestern university. Participants were chosen based on their current enrollment in a fall 2020 Educational Psychology course (mode age range of 25-34 years old), as this was done for a class project. All participants were provided with an informed consent page before participating in the study. After reading the informed consent, if participants continued with the study, they were

agreeing that they had fully read and understood the instructions of the study and were freely participating. Five participants were assigned to the intervention group and four participants to the control group.

Procedure

Participation was completed simultaneously in a virtual environment. Participants were randomly assigned to one of two CANVAS pages that contained written instructions on how to complete the experiment. Before beginning the experiment, participants were advised of the risks of participating as it might elicit feelings of discomfort, and participants were free to exit the study at any time. All participants completed three, short emotional Stroop tasks (EST).

During the emotional Stroop tasks, participants were asked to respond to the color of the words presented by pushing buttons on their keyboard with their index and middle fingers. In order for participants to become familiar with which buttons to press on their keyboard, a practice emotional Stroop task was administered before the three, actual tasks.

Following completion of the first emotional Stroop task, participants were instructed to watch one of two short videos. Participants did not know which condition they were assigned to or which video they would be watching. Once the participants finished the video clip, they completed the second emotional Stroop task. After the second emotional Stroop task, participants journaled for five minutes and then moved on to the third and final emotional Stroop task. Following completion of the final emotional Stroop task, participants were asked to fill out a short survey to assess demographics as well as journaling and bullying history.

Measures

The emotional Stroop tasks asked participants to respond to the color of the word that appeared on the screen (eg. the word nice appearing in the font color red, or danger in the font

color blue). The words participants saw consisted of positive (e.g., nice, caring, love), negative (e.g., angry, hate, danger), and neutral (e.g., smooth, cabin, potato) words. The order in which the words were presented was random. Each word appeared for up to 2000 milliseconds and there was 750ms between each stimulus. This process continued for three administrations of the emotional Stroop task. This emotional Stroop task was adapted from an emotional Stroop task created by Dr. Carrie Clark in psychopy and hosted in 'pavlovia' for administration in a web browser.

Participants completed a practice trial to familiarize themselves with the task before beginning the first emotional Stroop task (11 neutral words). Once finished with the practice trial, participants began the first emotional Stroop task consisting of 24 words (7 negative, 10 neutral, and 7 positive). Following the first emotional Stroop task, participants were advised to watch one of two, short video clips. Both videos were around one minute and thirty seconds long. The video was either positive, showing happy moments in life (control group), or negative, showing the experience of a child who was bullied (intervention group). The video clips were found and taken from YouTube. The control group were assigned the Happy Moments in Life video. The intervention group was assigned Alone - A Short Bully Video, to present an artificial traumatic experience without causing harm or undue stress. The video for the intervention group was trimmed to be the same length as the control group's video and to cut out the extreme ending of the original video to reduce the risk for participants.

After watching either video clip, participants completed the second emotional Stroop task. This emotional Stroop task consisted of 22 words (6 negative, 10 neutral, and 6 positive). Once the second emotional Stroop task was done, participants were instructed to journal for five minutes. Participants were able to free journal without prompt and could journal in whatever

form they saw fit best (e.g., handwritten, typed, or drawn out). After the five minutes of journaling, participants completed the final emotional Stroop task. This emotional Stroop task consisted of 24 words (7 negative, 10 neutral, and 7 positive).

Once participants had completed the final emotional Stroop task, they were asked to fill out a short survey. This survey collected data regarding participants' age, gender, frequency of journaling, frequency of experiencing bullying, and frequency witnessing others being bullied.

Results

Data Analysis

Analyses were focused on participants' demographics, response times (RT), and accuracy. The analyses were completed by looking at the mean RT and accuracy of responses to the emotional Stroop tests, between groups. Time-1 of the EST was treated as baseline data for assessing the impact of the artificial trauma. Time-2 was treated as the posttest after exposure to artificial trauma and as the baseline for the journal writing intervention. Time-3 was treated as the posttest after the journal writing intervention.

Sixty-six percent of the participants were within the age range of 25 - 34 years old. Fifty-five percent of participants had experiences with being bullied. This experience was fairly even present in both groups. The intervention group had 60% of the participants that experienced bullying. The control group had 50% of the participants that were bullied. Of the nine participants (5 – intervention, 4 – control), 88% had witnessed someone else being bullied. There were 100% and 75% of participants reporting witnessing bullying in the intervention and control groups, respectively. Regarding journaling, 66% of participants spent no time journaling, 22% journaled 1 - 3 times weekly, and 11% journaled 1 - 3 times monthly over the last six months.

Eighty percent of the intervention group did not journal and the same was true for 50% of the control group.

Emotional and Attentional Regulation and Trauma

The average response times score (ART) for each participant were calculated on the three emotional states of the trials (negative, positive, neutral) for before and after the viewing of the assigned video. The ART was analyzed between groups. The overall ART was calculated for the intervention and control group in the pretest and compared to the ART after the intervention. Baseline ART for both groups were similar across word types with those in the intervention group having a quicker ART than the control group for neutral words (see Figure 1). After the

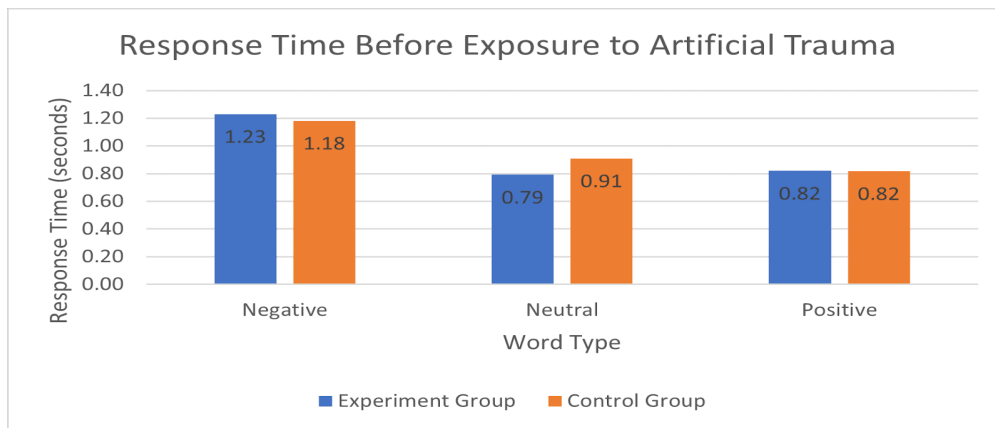


Figure 1: Response Times Before Exposure to Artificial Trauma. The average response times for groups was calculated using individual ART.

exposure to artificial trauma, participants in the intervention group had quicker ART across word types, except for positive word times where response times were slower (see Figure A2). The control group had quicker ART for negative words, slower ART to neutral words, and remained the same on positive words.

The average accuracy rate (AAR) was calculated for all participants. The group AAR was calculated based on individual averages. The AAR was compared between groups. Baseline AAR prior to watching the assigned videos was calculated (see Figure A3). The intervention

group's AAR across negative, neutral, and positive words were 100%, 98%, and 94.4% respectively. The control groups' AAR across negative, neutral, and positive words were 96.5%, 97.5%, and 96.5%, respectively. The AAR was calculated for both groups after watching the group-assigned videos (see Figure A4). The intervention group maintained 100% accuracy for negative words and was less accurate, relative to their baseline, for neutral and positive words which were 94% and 86.6%, respectively. The control group had slightly lower AAR on negative and neutral words, 91.8% and 95%, respectively. The control group increased AAR for positive words, 100%.

Emotional and Attentional Regulation and Journaling

The aggregated ART for all participants were calculated on the three emotional word types of the trial (negative, positive, neutral) for pre- and post-journaling. Prior to journaling, participants had ARTs of 1.01, 0.83, and 0.84 seconds for negative, neutral, and positive words, respectively. After journaling, all participants had slower ART for negative words, and quicker ARTs for neutral and positive words relative to their ART before journaling (see Figure 5). The

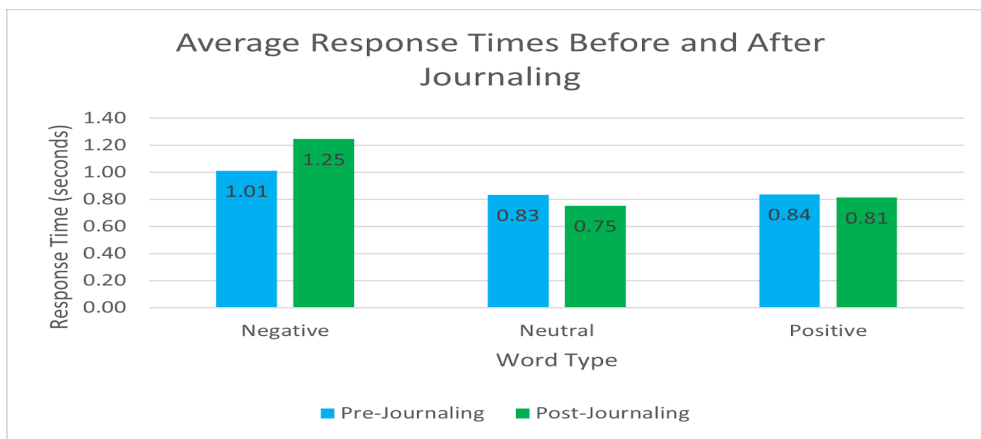


Figure 5: Response Times Before and After Journaling. The average response time for all participants was calculated before and after journaling.

AAR for participants prior to journaling were 96, 95, 93 percent for negative, neutral, and positive words, respectively. After journaling, there were increases in AAR across all word types (see Figure A6).

Discussion

In the current study, we examined the relationship between trauma and emotional and attentional regulation when completing an emotional Stroop task. We found that both trauma exposure and journaling exerted effects on Stroop tasks accuracy and response times. However, these effects were not specific to negative emotional trials.

We investigated whether there would be a difference in response time between the first and second emotional Stroop tasks after participants were exposed to trauma or no trauma. Exposure to trauma was done through random assignment of watching a video aimed to elicit either positive (control group) or negative (intervention group) emotions. It was expected that participants in the intervention group would have an increase in overall response time between the first and second administered emotional Stroop tasks. This prediction was based on the question of whether trauma had an effect on emotional and attentional regulation. The intervention group showed a quicker response time from the first Stroop task to the second when responding to negative and neutral words. These results are inconsistent with previous literature which suggested that negative or neutral words would act as a distractor during the emotional Stroop task and cause delayed response times (Caparos & Blanchette, 2014; Iffland et. al., 2019).

Response time between both groups was compared in examining whether participants in the intervention group showed slower response times than participants in the control group due to the exposure of trauma. Participants in the intervention group showed a slower response time

to negative words during the emotional Stroop task compared to the control group. This finding is consistent with previous research studies where individuals with histories of peer victimization or trauma have a longer response time than individuals with no history of peer victimization or trauma (see Iffland et. al., 2019 as a reference), but they showed quicker response time to positive words compared to participants in the control group.

Regarding accuracy, participants in the intervention group declined in accuracy from the first Stroop task to the second when responding to neutral and positive words which goes against predictions suggesting negative words would act as a distractor, and lead to a longer response time and smaller accuracy. It is possible that the intervention group had quicker responses to negative words because a negative schema may have been activated, meaning participants in the intervention group were attending more and responding faster to the negative words.

This study also examined the effect journaling had on emotional and attentional regulation. It was predicted that journaling would increase emotional and attentional regulation, which was measured by response time between the second and third Stroop tasks. Participants had slower response times for negative words, and quicker response times for neutral and positive words from the second to the third Stroop task. Based on previous literature (Lara, 2020), journaling can act as a coping mechanism for individuals who experience emotional distress. Journaling in our study found improvement in emotional regulation for neutral and positive words but not for negative words. It was also predicted that journaling would increase attentional regulation which was measured by accuracy rate between the second and third Stroop task. Accuracy for participants increased across all word types between tasks and after journaling. These findings may indicate that journaling improves attentional regulation by helping individuals shift their attention away from negative emotions. Findings on the effects of

journaling on emotional and attentional regulation in this study are consistent with previous literature (Lara, 2020).

Our research study had several strengths to its proposed design. First, to adhere to ethical guidelines and reduce harm to participants, we used the bullying video in the intervention group to represent trauma. We conceptualized bullying/peer victimization as an ‘artificial trauma’. Second, our research design utilized the use of pre and posttests to allow us to easily compare group differences and to examine whether trauma or journaling had an effect of emotional and attentional regulation. Lastly, our study randomly assigned participants to the treatment or control group. This allowed for an equal chance of participants being assigned to either condition. Random assignment was done by using an online randomized group generator. By using this tool for random assignment, it kept the selection of groups impartial.

Limitations

While this research study had several strengths, it also has limitations which should be addressed. First, this study had an extremely small sample size (N=9). This small sample size leads this study to have low statistical power, meaning the ability to detect relationships in the real world is extremely low. Due to the small sample size of the study, findings are not generalizable to larger populations. A second limitation was the number of times participants took the administered emotional Stroop task. The emotional Stroop task was taken four times, including the practice trial at the beginning of the experiment. Using this task repeatedly throughout the experiment causes a threat to internal validity. Reasons for this threat to internal validity is that participants were able to practice and become familiar with the administered emotional Stroop task. Repeated exposure and practice could have allowed participants to better their performance rather than being a true measure of emotional and attentional regulation.

Participants might have also felt tired or lost interest in the task after repeatedly completing the same task. The third limitation of this study was missing data from the final emotional Stroop task. This limitation could have influenced the results of the effects of journaling on emotional and attentional regulation. Additionally, using the WEDP as a point of reference, the current study's intervention was too short and the dosage of journal writing creates issues for validity. Participants were also not guided to write on a specific emotional/stressful experience. The writings were not shared, therefore, the nature of the journaling experience could not be reported or included in the analysis. Finally, the limitation of truly eliciting a trauma-response from participants in the intervention group was not truly assessed. Ethically, participants cannot be at risk for harm, however, an assessment for trauma-feelings for participants could have been assessed to gauge the possibility the study is mimicking the concept being evaluated.

Directions for Future Research

This study did not take into consideration gender and cultural background differences regarding emotional and attentional regulation. Future studies on the effects of trauma and journaling on emotional and attentional regulation should examine how gender influences the impact of trauma and journaling on emotional and attentional regulation. Accounting for gender differences is important because it might impact how emotions are processed and the overall journaling experience. Along with gender differences, future studies should seek to examine how cultural background influences the effects of trauma and journaling to emotional and attentional regulation. Furthering knowledge on this topic can help to create interventions, such as journaling, aimed at improving emotional and attentional regulation and decreasing the negative effects of trauma that an individual might endure. Another recommendation is to increase the length of the intervention, the dosage of journal writing experiences, and specific writing

prompts provided to participants. This will be important to understanding the required minimum threshold of writing experiences necessary to counteract the effects of traumatic experiences on attentional and emotional regulation. Additionally, it would provide better evidence of the types of prompted or unprompted writing experiences that makes a significant difference. Similarly, it would be beneficial to engage participants beyond the writing to get a deeper understanding of how journal writing is or is not helping the individual. Finally, it would also be worthwhile for future research to include follow-up after the intervention to understand the duration of the effects that occurred during the intervention.

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Appendix

The appendix includes the figure of the average response times and accuracy of participants at Time-1, Time-2, and Time-3.

Figure A1. Response Times Before Exposure to Artificial Trauma. The average response times for groups was calculated using individual ART.

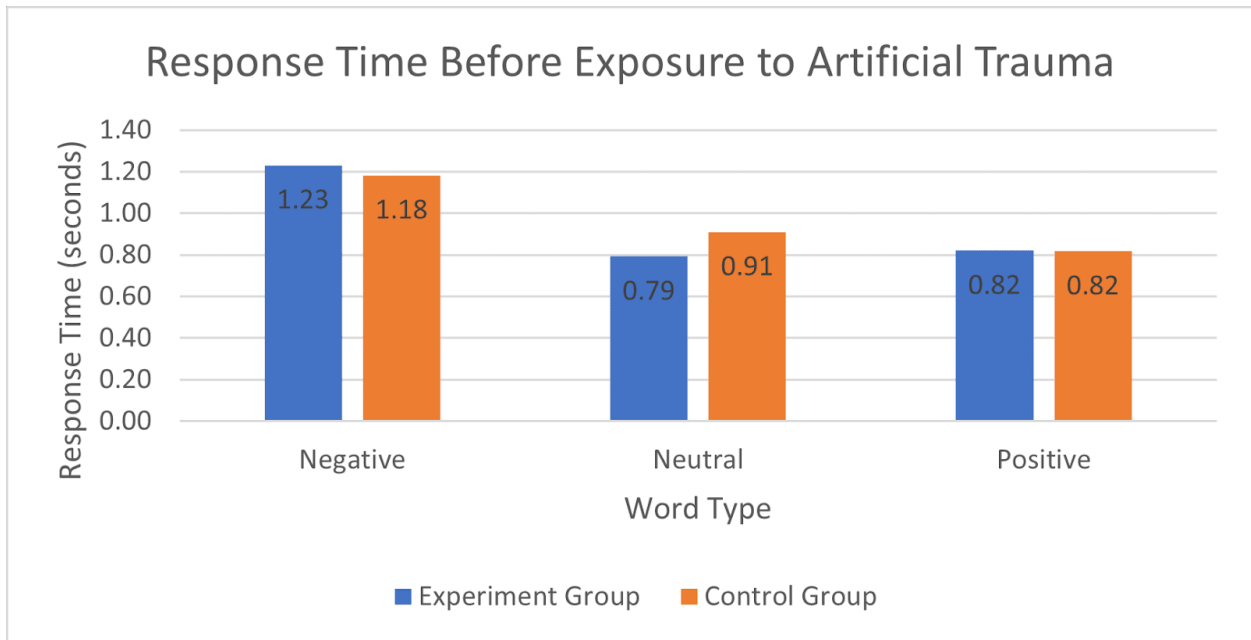


Figure A2. Response Times After Exposure to Artificial Trauma. The average response times for groups was calculated using individual ART.

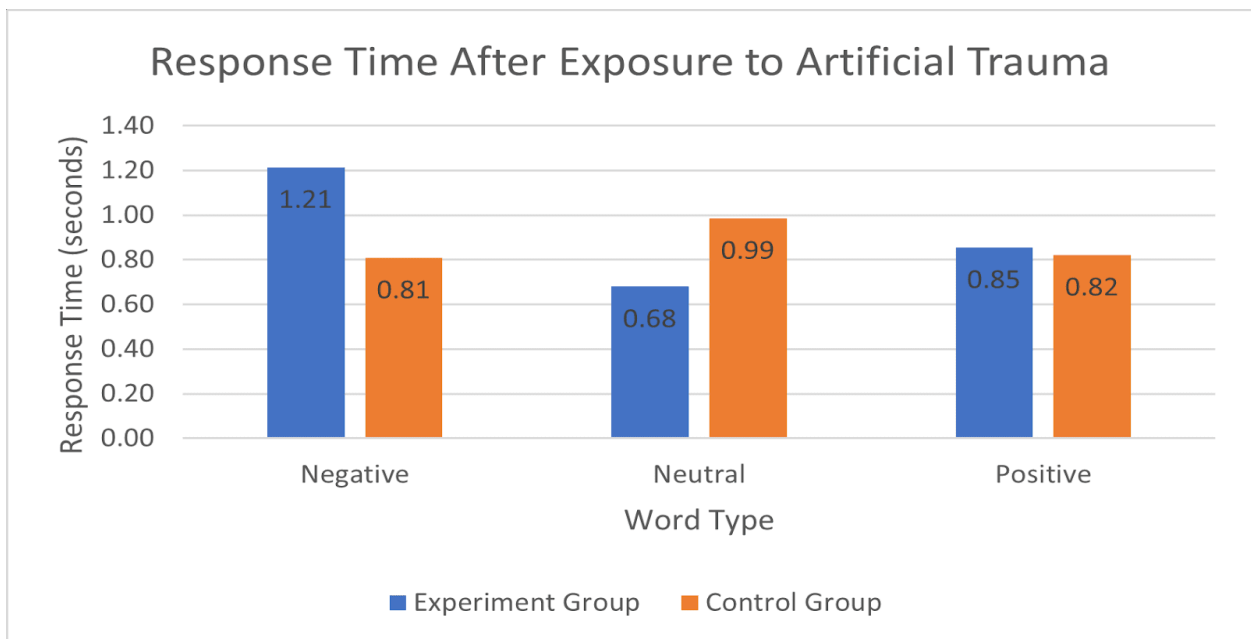


Figure A3. Accuracy Rates Before Exposure to Artificial Trauma. The average accuracy for the group was calculated using individual means of group participants.

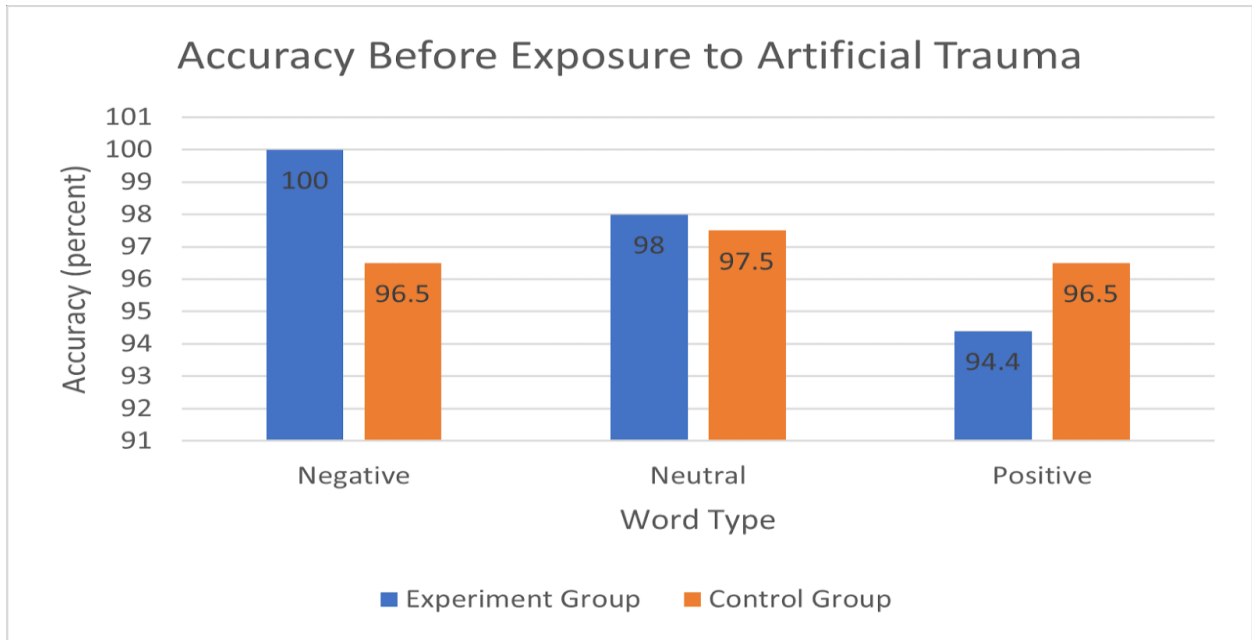


Figure A4. Accuracy rates After Exposure to Artificial Trauma. The average accuracy for the group was calculated using individual means of group participants.

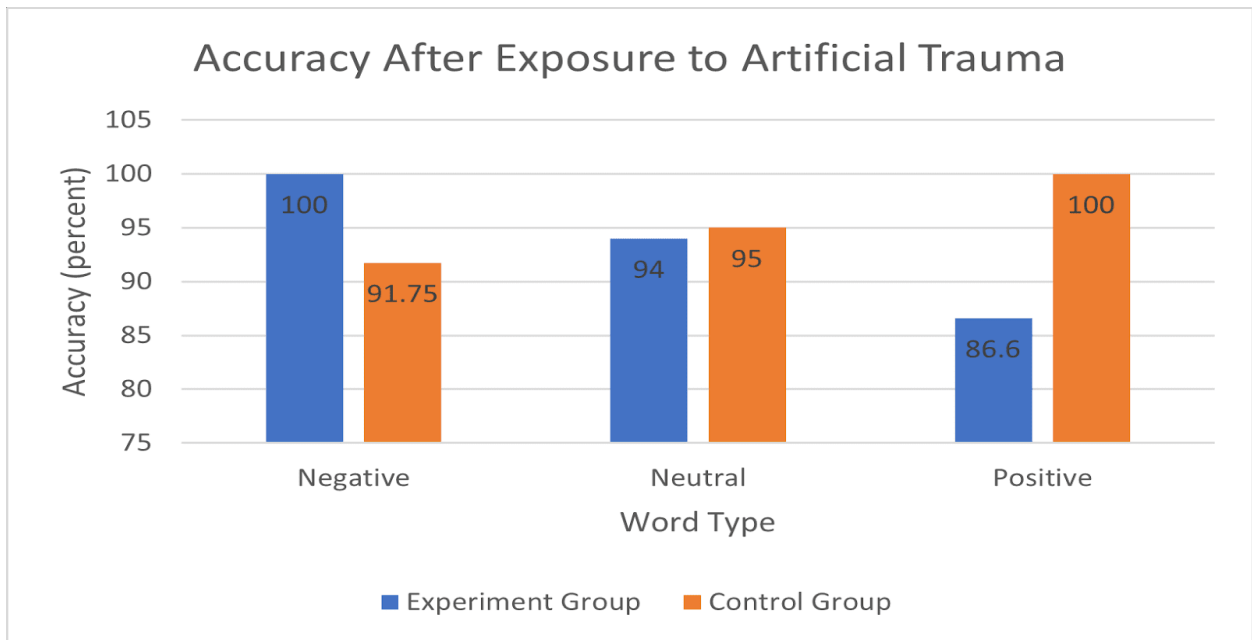


Figure A5. Response Times Before and After Journaling. The average response time for all participants was calculated before and after journaling.

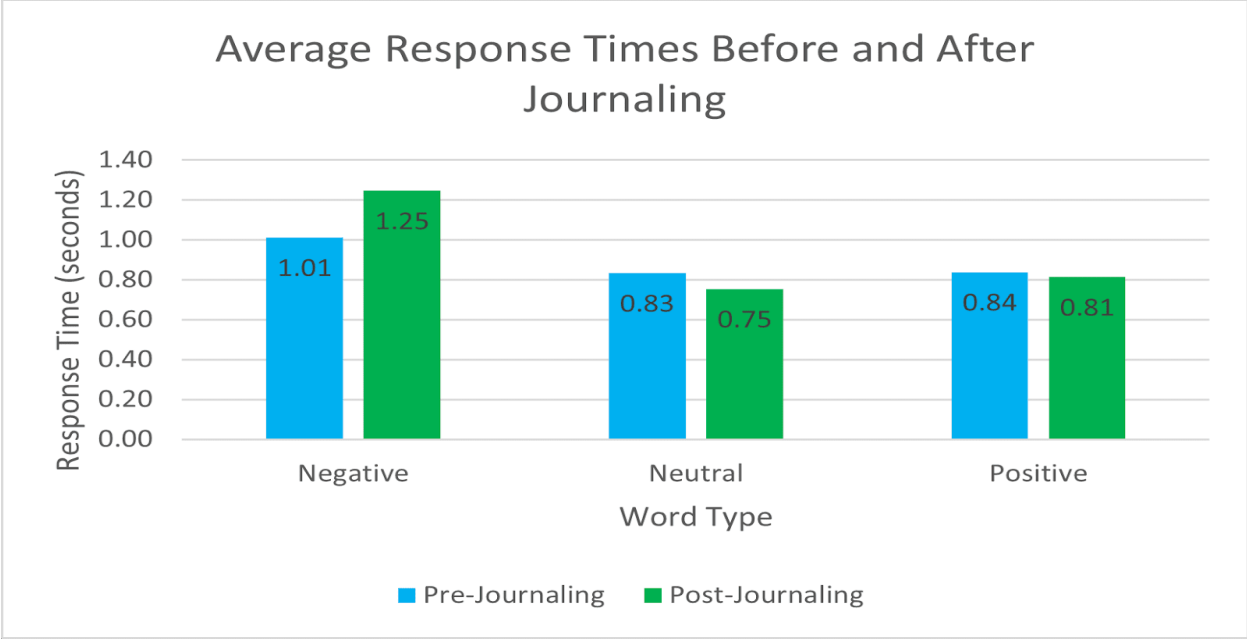


Figure A6. Accuracy Rates Before and After Journaling. The average accuracy rate for all participants was calculated before and after journaling.

