The Influence of PTSD Symptom Severity on Emotion-Laden Word use and Cognitive Processing Styles
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RIT | College of Liberal Arts **Department of Psychology**

Department of Psychology- Matthew Altobelli (mgagsh@rit.edu), Braeden Mcgrale (bnm6606@rit.edu), Dr. Tina Sutton (tmsgsh@rit.edu)

Introduction

· The language individuals use to describe adverse experiences provides deep insight into their thoughts and emotions

· Words reflect underlying cognitive and emotional processes, highlighting how individuals process and make sense of traumatic events

· Analyzing emotional language allows us to understand the interaction between cognition, emotion, and mental health

Emotion-Label vs. Emotion-Laden Words:

•Emotion words are considered a distinct category of words, separate from concrete and abstract words; however, recent research suggests a distinction between emotion-label words and emotion-laden words (see Kazanas & Altarriba, 2015; Zhang et al., 2019)

•**Emotion-Label Words**: Refer to specific affective states (e.g., "happy," "sad") (Pavlenko, 2008; Zhang et al., 2017)

•**Emotion-Laden Words**: Evoke emotional responses without specifying a state (e.g., "funeral," "birthday")

•Studies using cognitive tasks have shown an interaction between word type and valance

•All emotion-laden words (positive and negative) produce standard Stroop interference effects, but only negative emotion-label words produce the standard Stroop effect (Altarriba & Basnight-Brown, 2011)

•In RSVP work, repetitions blindness effects are larger in emotion-label than emotion-laden words

•EEG studies also find that emotion-label words and emotion-laden words are processed differently. Specifically, differences in the N170 and LPC components (responsible for distinguishing the emotional characteristics of words) (Zhang et al., 2017).

•This study investigates the use of these two different word types in narratives about traumatic events in individuals with low and high PTSD symptom severity

•**Cognitive Processing Styles and PTSD**:
•PTSD severity is linked to specific cognitive processing styles that influence language use:
  •**Accommodation**: Adjusting beliefs based on new information—linked to adaptive outcomes
  •**Overaccommodation**: Overgeneralizing new information—linked to maladaptive processing
  •**Assimilation**: Fitting new experiences into rigid pre-existing beliefs—linked to maladaptive outcomes
•This study examines how these styles affect language, focusing on the use of emotion-laden words in PTSD

Research Questions:

1. **Emotion Word Use**: How are emotion words (laden/label) used to describe adverse events?
2. **Emotion Words and PTSD**: Does PTSD symptom severity effect the use of emotion words?
3. **Cognitive Processing Styles and PTSD**: Are cognitive processing styles, such as accommodation, overaccommodation, and assimilation, differentially represented in individuals with varying levels of PTSD symptom severity?

Methods

Participants:
•257 students from RIT (average age 19.31; SD = 1.39)
• Gender: 129 reported being Female (50.2%), 110 Male (42.8%), 11 Non-binary (4.3%) and 7 preferred not to say
•Race: Most of the participants reported being Caucasian (67.7%) followed by Asian decent (16.7%), Hispanic (5.4%), African American (4.3%), Native American (1.2%), Pacific Islander (0.4%), with 7 participants selecting other (2.7%) and 4 preferring not to say (1.6%)

Materials:
•Narrative Prompt: Participants described their thoughts and feelings about a personal or observed adverse event
•Brief Post Traumatic Cognitions Inventory (PTCI-9; Wells et al., 2017): Assessed negative self and environmental perceptions
•State-Trait Anxiety Inventory (STAI; Spielberger, 1983): Evaluated current and typical anxiety levels
•Positive and Negative Affect Schedule (PANAS; Watson et al., 1988): Measured current emotional states
•Beck's Depression Inventory (BDI-II; Beck et al., 1996): Assessed depressive symptom prevalence
•Life Events Checklist (LEC; Sweeting and West, 1994): Quantified adverse experiences diversity
•Linguistic Inquiry and Word Count (LIWC-22; Boyd et al., 2022): Analyzed textual content for specific word categories
•Narrative responses were coded by trained annotators using the Impact Statement Coding manual (Sobel et al., 2009). Fleiss Kappa confirmed inter-rater reliability (κ = 0.79, p < 0.001)
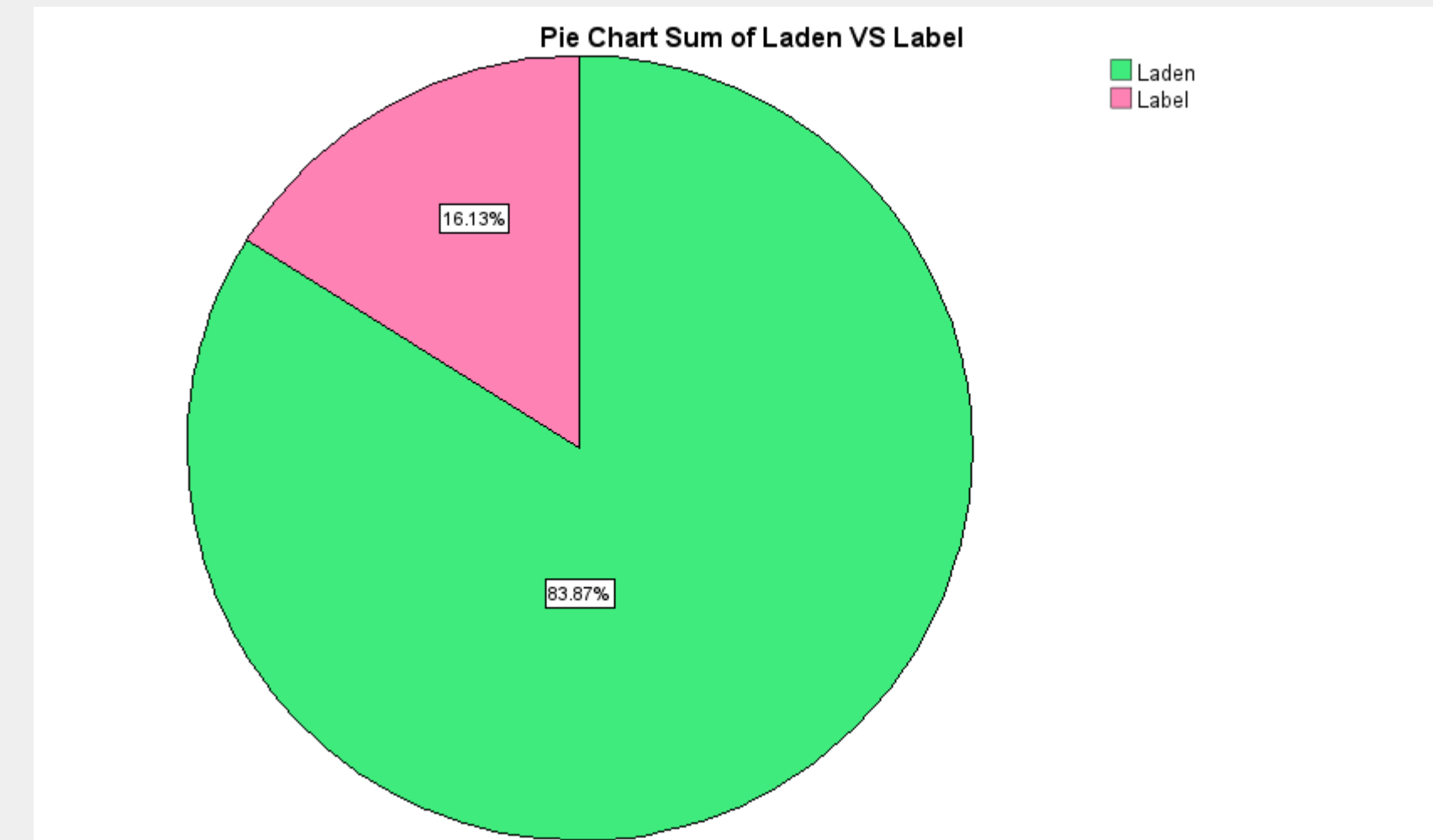
Results

RQ1: Emotion Word Use

Figure 1. Pie chart of frequency difference between emotion-laden and emotion-label word use in narratives describing adverse events

There are 779 total statements in the data set. The total word count is 13,592, of which 14% (1,843) are emotion words. Of the emotion words, 84% (1550) are emotion-laden, and 16% (298) are emotion-label.
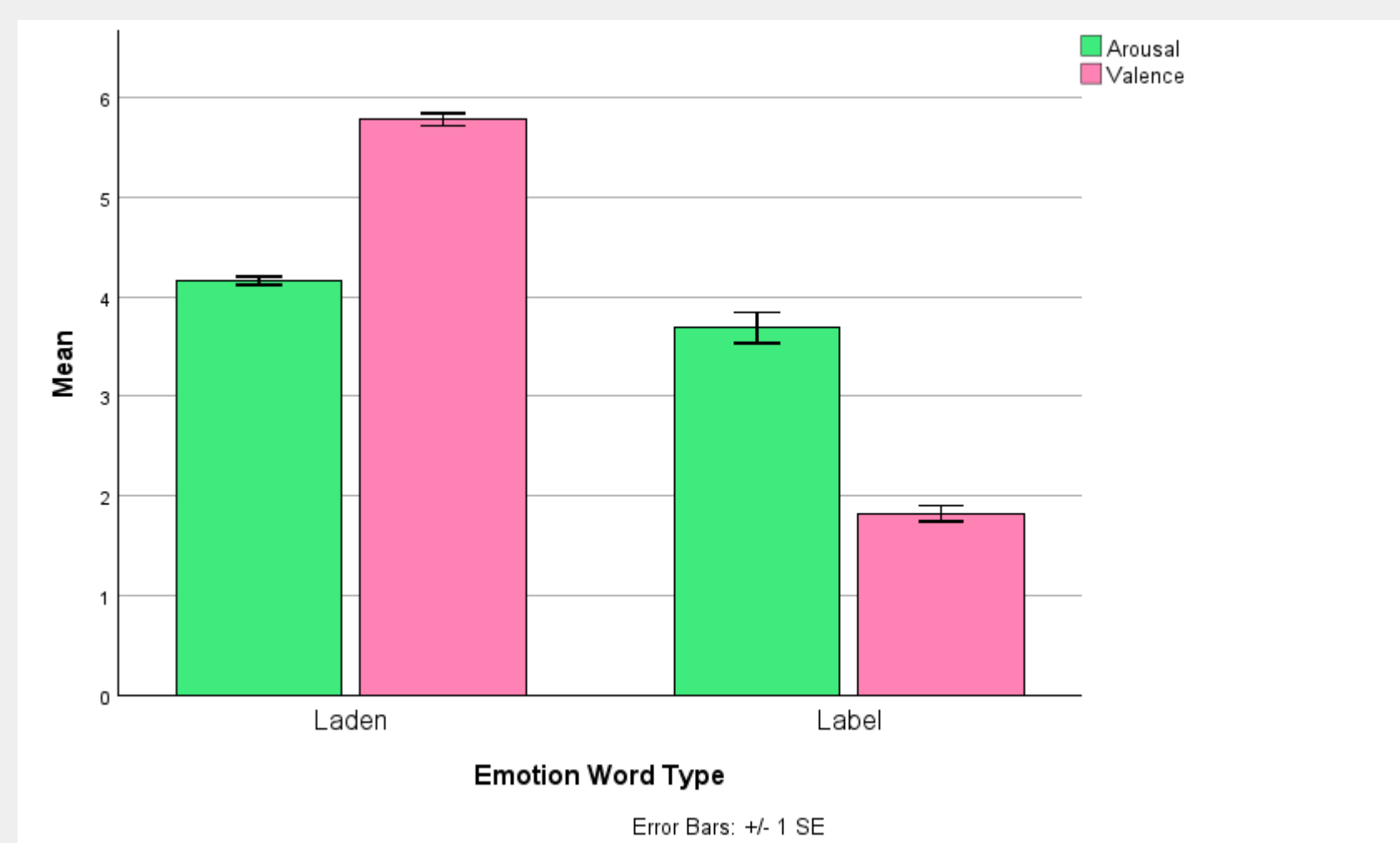

Figure 2. Clustered Bar graph of the difference between Laden and Label Arousal and Valence means

Laden Valence ($M = 5.78$, $SD = 1.05$) is significantly more positive than Label Valence ($M = 1.82$, $SD = 1.22$) $f = 40.31$, $p < 0.001$

Laden Arousal ($M = 4.17$, $SD = 0.67$) is significantly higher than Label Arousal ($M = 3.69$, $SD = 2.47$) $f = 544.51$, $p < 0.001$

RQ2: PTSD Symptom Severity and Emotion Word Use

PTSD Symptom Severity was split into "Low" and "High" based on the PTCI-9. The total severity score was calculated by taking the average of the three subscales. The lowest possible score is 1 and the highest is 7. For this study, those that scores less than 4 were considered low, and over 4 were considered high.
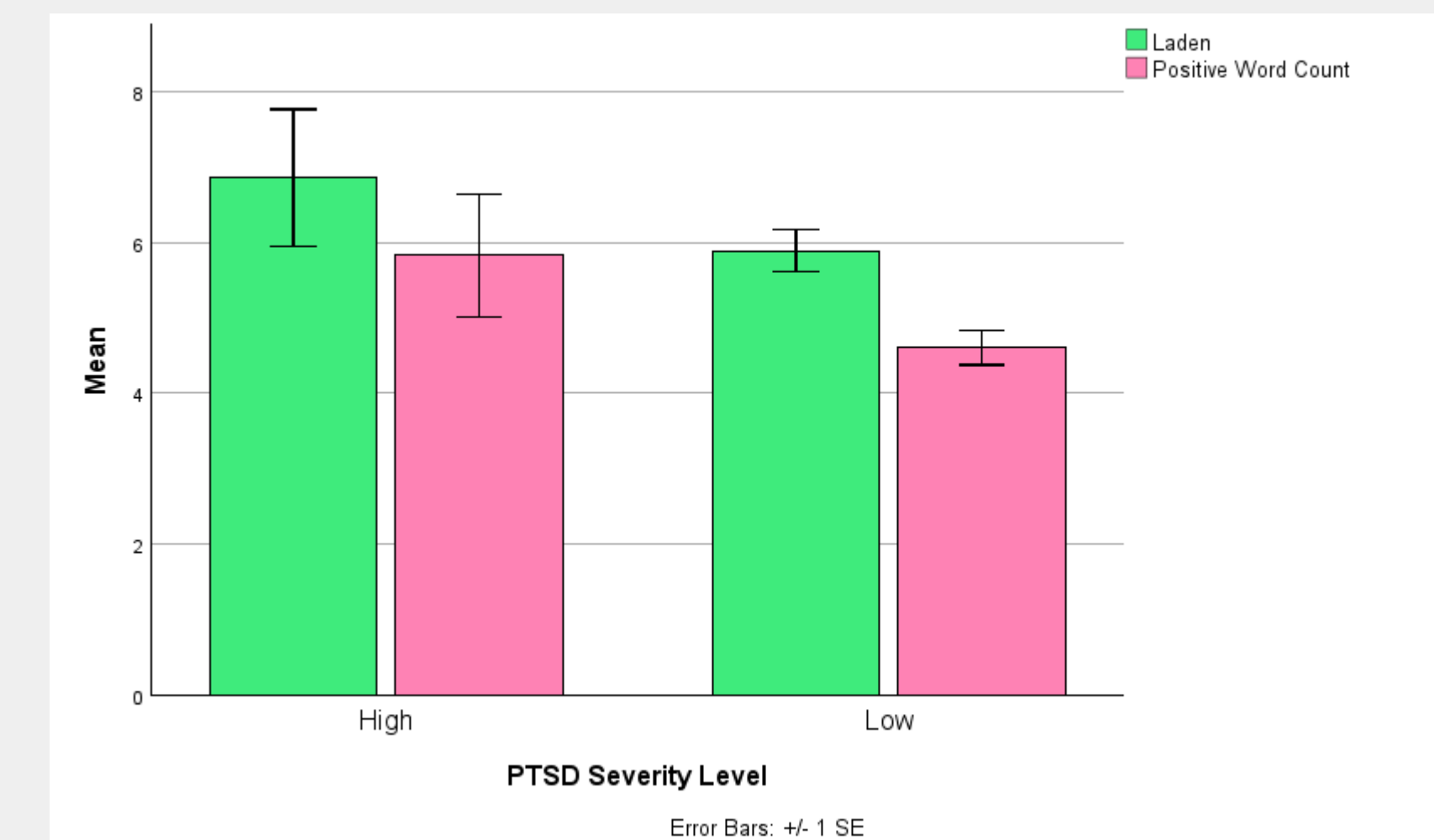

Figure 3. Clustered Bar graph of the difference between High and Low PTSD symptom severity on emotion-laden and positive word use in narratives

Those with a high PTSD symptom severity use more emotion-laden words ($M = 6.87$, $SD = 5.48$) than those with low PTSD symptom severity ($M = 5.90$, $SD = 4.10$) $f = 7.99$, $p < 0.00$

Those with high PTSD symptom severity use more positive words ($M = 5.83$, $SD = 4.88$) than those with low PTSD symptom severity ($M = 4.61$, $SD = 3.41$) $f = 8.43$, $p < 0.00$

RQ3: PTSD Symptom Severity and Cognitive Processing Style

Figure 4. Pearson correlation matrix showing the relationship of PTSD symptom severity with cognitive processing styles and laden word use

PTSD symptom severity has a positive association with overaccommodation and assimilation. PTSD symptom severity also has a positive association with laden valence. Laden word count has a positive association with both Accommodation and Overaccommodation.

Discussion

Emotion Word Use (Laden vs. Label)

• Participants used more emotion-laden words compared to emotion-label words when describing adverse events. Given that there are more emotion-laden words available in the lexicon, this is unsurprising.

• Differences were also observed in valence and arousal between these word types, with both measures being higher for emotion-laden words compared to emotion-label words. This suggests that laden words carry a stronger emotional charge, regardless of whether the emotion is positive or negative.

PTSD Symptom Severity and Influence on Laden Word Use

• PTSD symptom severity significantly influences the use of emotion-laden words. Participants with high PTSD symptom severity used more laden words overall, with a particular increase in positive laden words compared to those with lower PTSD severity.

• However, those with higher PTSD severity often negated the positive laden words they used. For example:

  ◦ "Cause. anger towards the other person Feeling. Sad and speechless, can't believe someone would do that to another" (Laden Valence: 7.05, Average Valence: 4.78)

  ◦ In this instance, the positive laden word "believe" is negated by "can't," indicating a complex emotional modulation strategy

• This pattern suggests that individuals with severe PTSD use positive experiences or emotions with diminished certainty or negation, reflecting a defensive or guarded emotional stance. In contrast, those with lower PTSD symptom severity tend to use emotion-laden words in a more straightforward and adaptive manner.

PTSD Symptom Severity and Cognitive Processing Styles

  ◦ Overaccommodation and assimilation processing styles are more prevalent in individuals with higher PTSD severity, indicating a rigid or overgeneralized approach to understanding adverse events. This is consistent with research linking these processing styles to maladaptive emotional regulation and poorer mental health outcomes.

  ◦ Emotion-laden word use was positively correlated with both accommodation and overaccommodation processing styles. Those with an accommodated style, typically associated with low PTSD severity, use laden words in a direct manner, reflecting adaptive cognitive processing.

  ◦ In contrast, individuals with high PTSD severity who exhibit overaccommodated or assimilated processing styles use laden words differently—often employing positive laden words but negating them. This indicates an inability to fully integrate positive information, contributing to sustained negative affect.

Conclusion

PTSD Symptom Severity and Emotional Language:

• Higher PTSD severity is linked to maladaptive cognitive processing styles (e.g., overaccommodation, assimilation)

• These maladaptive styles lead to complex emotional modulation, such as negating positive laden words, which may perpetuate negative psychological outcomes (e.g., sustained distress, difficulty in emotional regulation)

Therapeutic Implications:

• Encouraging an accommodative processing style—adaptively adjusting beliefs based on new information—can help mitigate the negative effects of PTSD

• This approach can promote healthier emotional expression, emotional flexibility, and overall resilience

Future Directions:

• Preliminary findings from ongoing work with a clinical population of veterans suggest an even stronger association between positive laden word use and PTSD symptom severity