



# Benefits of Expressive Writing: Improvements in Vagal Tone Over Time

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## ABSTRACT

Research consistently shows that writing about traumatic, stressful or emotional events is associated with improved physical and psychological health. This study expands previous work by assessing the effects of expressive writing on vagal tone and heart rate over time. Results indicate that heart rate and to a lesser degree, vagal tone, improved over time in the expressive writing conditions.

## INTRODUCTION

An extensive body of literature shows that writing about traumatic or emotional experiences results in improved emotional and physical health and well-being. In Pennebaker's (1997) expressive writing paradigm, participants are instructed either to write about traumatic emotional events or neutral topics over several sessions. Those assigned to the emotional writing condition typically display physical and psychological health improvements over time compared to the control condition (Pennebaker, 1997). This study extends pilot work we did in our lab which found that when participants engaged in cognitive restructuring (subjects were asked to reframe an emotional experience in positive terms i.e., meaning-making), vagal tone improved. A second major difference in our study versus previous published work is that our study assessed the effects of expressive writing on the parasympathetic (e.g., vagal tone) and sympathetic nervous system responses over time.

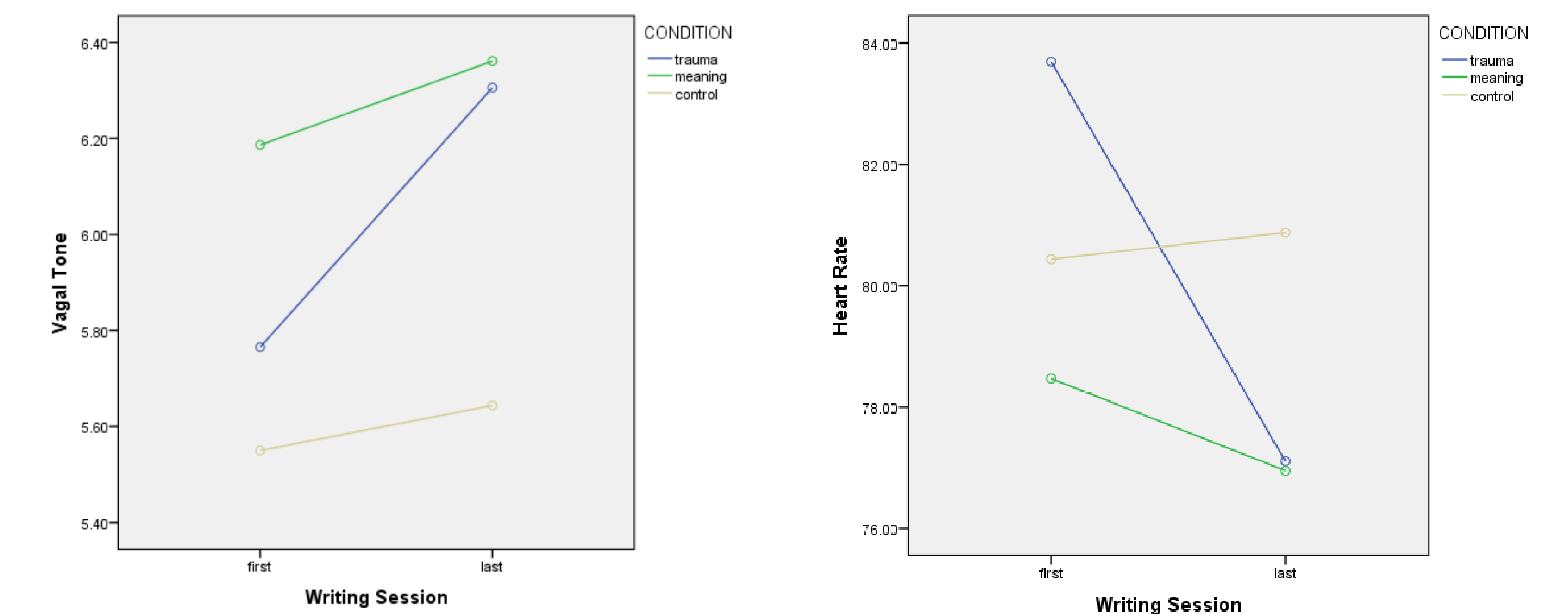
## METHOD

Forty-four subjects (18 males, 24 females), ranging in age from 18 to 54 years of age, with a mean age of 26.18 years ( $sd = 7.84$ ) served as participants. Subjects were randomly assigned to one of the three experimental conditions: standard writing ( $n=19$ ), meaning-making ( $n=17$ ), control ( $n=8$ ). Subjects wrote for at least two sessions and most wrote for three sessions. Before the first session, subjects completed a demographic questionnaire. During each of the sessions, baseline physiological measures were taken while the participant viewed a neutral video (ocean waves) for three minutes. Next, participants were instructed to write continuously for 15 minutes after which participants again viewed the neutral video while post-writing physiological measures were recorded. Lastly, participants were asked a series of questions about the experience they elected to write about (e.g., "how traumatic was the experience you just wrote about?").

## Results

Similar to our previous work, a repeated-measures ANOVA comparing the first to the last writing sessions within-subjects showed a trend in improvement in vagal tone over time,  $F(1) = 2.971$ ,  $p = .092$ . Trend data show that vagal tone improved for both expressive writing conditions compared to the control group but the interaction was not significant.

## Results, cont.



We also compared the first to the last writing sessions with a repeated-measures ANOVA for heart rate. Results show improvement in heart rate over time,  $F(1) = 4.597$ ,  $p = .038$ . A significant interaction between time and writing condition was also found,  $F(2) = 3.425$ ,  $p = .042$ . Post hoc analyses suggest that heart rate improved for both expressive writing conditions compared to the control group with a greater improvement for subjects in the standard expressive writing condition.

## Discussion

The results of this study show that expressive writing results in improved heart rate and a trend towards improvement in vagal tone compared to the control condition. The improvement appears to be more dramatic in the standard condition.

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