The Effect of Short-Term Positive Journaling on Perceived Stress and Salivary Cortisol Levels

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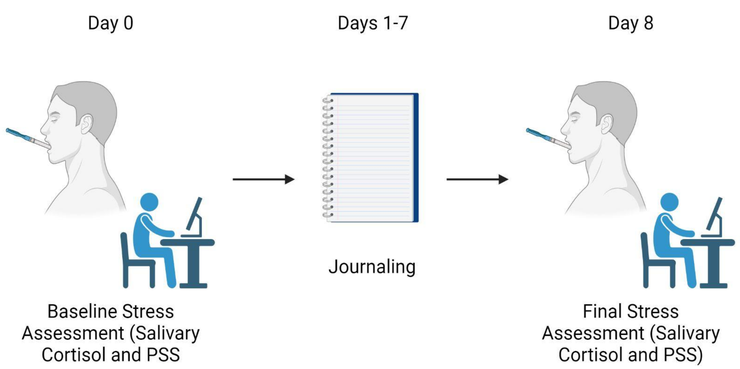
Introduction

- Prolonged stress can have detrimental effects on individuals, such as unhealthy dietary behaviors[1] and impaired cognitive function[2].
- Cortisol is the associated stress hormone, and elevated levels can also negatively impact cognition[2], as well as induce other health issues.
- 75% of college students report having elevated levels of stress[3].
- Studies on how journaling can impact stress and coping have previously been done, showing that it has positive effects after one to two months[4].
- We aim to find if short-term, consistent, positive journaling for the span of one week has significant effects on stress and cortisol levels in college students.

Methods

- To measure perceived stress as well as physiological stress, we used the Perceived Stress Scale (PSS) as well as a competitive enzyme immunoassay for measuring cortisol levels.
- Salivary cortisol samples were collected from participants at the beginning and end of the study. At these times, participants also completed the PSS questionnaire.
- For the duration of the study, participants were encouraged to journal as a stress-relieving intervention and were instructed to keep track of how many days they journaled.



Results

Salivary cortisol levels decrease only after consistent journaling in females

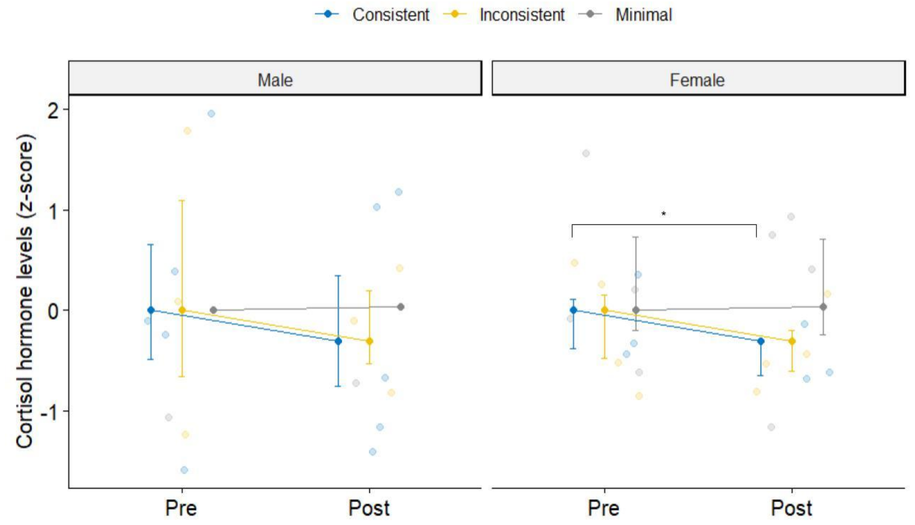


Figure 2. Salivary Cortisol Levels Before and After Journaling Based on Consistency and Sex. Salivary Cortisol before and after a week of journaling was measured through ELISAs, and the levels of cortisol were expressed as its z-score. Z-scores in Post are based off of the mean in Pre. The scores were grouped based on the consistency in journaling and sex. Journaling was divided into: Consistent (6-7 times), Inconsistent (3-5 times), and Minimal (0-2 times). Error bars represent standard error. The control is the Pre group and Post is the experimental group. The *Consistent* male students (n = 5) had no significant decrease in cortisol (t = -0.56, df = 4, p = 0.60). The *Inconsistent* male students (n= 3) showed an insignificant decrease in cortisol (t = -0.34, df = 2, p = 0.77). No significance could be calculated for the *Minimal* male students (n = 1) due to the small sample size. The *Consistent* female students (n = 3) revealed a significant decrease in cortisol (t = -4.54, df = 2, p = 0.045). The *Inconsistent* female students (n = 4) had an insignificant decrease in cortisol (t = -0.47, df = 3, p = 0.67). The *Minimal* female students (n = 4) had an insignificant increase in cortisol (t = -0.05, df = 3, p = 0.96). Legend: * (p < 0.05).

Psychological stress decreases after both consistent and inconsistent journaling in females but only after consistent journaling in males

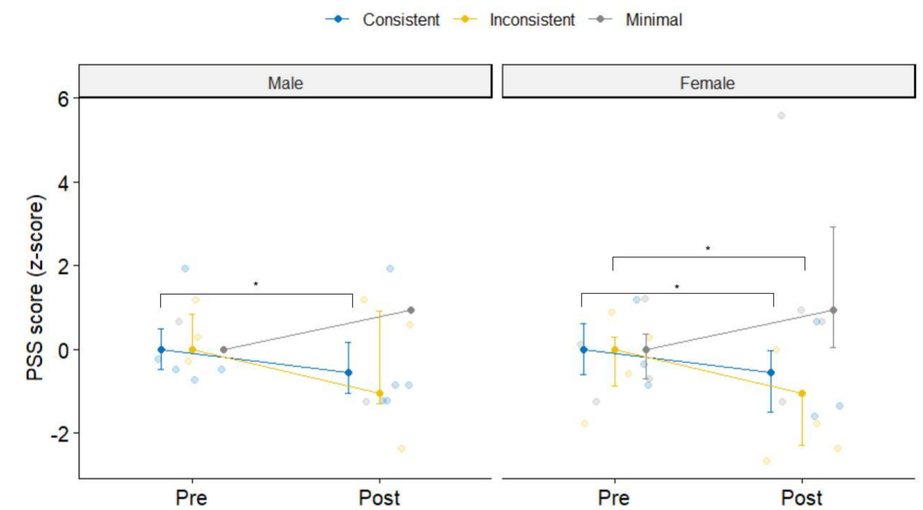


Figure 3. PSS Score Before and After Journaling Based on Consistency and Sex. PSS was taken before and after a week of journaling, and the scores were expressed as their z-score. Z-scores in Post are based on the mean in Pre. The scores were grouped based on the consistency in journaling and sex. Journaling was divided into Consistent (6-7 times), Inconsistent (3-5 times), and Minimal (0-2 times). Error bars represent standard error. The control is the Pre and Post is the experimental group. The *Consistent* male students (n = 5) had a significant decrease in their PSS score (t = -3.50, df = 4, p = 0.02). The *Inconsistent* male students (n = 3) showed an insignificant decrease in the PSS score (t = -0.55, df = 2, p = 0.63). The *Minimal* male students (n = 1) could not be tested for significance due to the small sample size. The *Consistent* female students (n = 3) had a significant decrease in the PSS score (t = -5.20, df = 2, p = 0.04). The *Inconsistent* female students (n = 4) had an significant decrease in the PSS score (t = -3.31, df = 3, p = 0.045). The *Minimal* female students (n = 4) had an insignificant increase in the PSS score(t = -0.05, df = 3, p = 0.96). Legend: * (p < 0.05).

Conclusions and Future Implications

- Consistent journaling may be an effective short-term intervention to reduce perceived stress in both males and females
- Inconsistent journaling also has positive effects on perceived stress in females
- There were sex differences in salivary cortisol levels following the short-term intervention of journaling.
- journaling of any level is not an effective short-term intervention for reducing cortisol
- Consistent journaling in women is an effective short term method to decrease salivary cortisol.
- Future research should delve into more effective methods for males to reduce cortisol/stress
- Positive journaling may an effective short-term intervention for stress in females.

Limitations

- The sample size was small (n = 6) ⟶ experimental groups were also small.
- There were more females (60%) than males (40%) in the study.
- The study sample was not diverse (White = 64%; Black = 4%; Asian = 32%)
- There could be a presence of individual, confounding factors for stress within the college environment that could have created fluctuations in cortisol for large groups within the sample: for example, acute periods of intense testing.

Acknowledgements

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References

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