

## Tilburg University

### Crying, mood, and cortisol

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Frey's (1985) theory on emotional tearing is based on the following observations: (1) distress cause a change in the body's chemistry; (2) people generally feel better after crying; and (3) weeping is an excretory process. These observations led him to put forth the following hypothesis: people feel better after crying because tearing helps to remove the chemicals that build up when distressed, re-establishing the homeostasis. The aim of the present study was to test this hypothesis, focussing on psychological (mood) and biological (saliva cortisol) indices of distress.

Two studies were carried out in which female students (N = 63) were exposed to emotional films. In Study I, subjects were exposed to the film "Shadowlands". In Study II the participants were exposed to the film "Once were warriors". Before the experimental film, a neutral documentary report was shown.

Subjects rated their mood on 9 likert items and took a saliva sample on three occasions: (1) before the neutral film; (2) before the experimental film; and (3) after the experimental film. The participants also provided estimates of the amount of tearing.

## ABSTRACTS

The results of ANOVAs, with Group (crying/no crying) as between-subjects variable and measurement (before/after the experimental film) as within-subject variable, yielded no significant interactions for any of the mood variables nor for cortisol. Thus, mood became worse for cryers and non-cryers to the same degree. However, the amount of crying correlated significantly ( $r(65) = .27$ ;  $p = .03$ ) with the decrease in cortisol. No associations were found with mood changes. Cortisol changes also were not related to subjective mood changes. The present results thus suggest that crying may help to restore homeostasis after a state of emotional distress.

EMOTIONAL RESPONSES, HEART PERIOD VARIABILITY, AND PHYSICAL ACTIVITY, J.J. Sollers, MA, C.A. Mueller, and J.F. Thayer, Ph.D., University of Missouri-Columbia

High levels of negative emotional experience have been linked to a number of disease states. For example, specific emotions such as hostility have been associated with increased risk for cardiovascular disease (CVD). Similarly, a physically active lifestyle has been associated with a decreased risk of CVD. One possible mechanism for this decreased risk is increased vagal input to the heart as indexed by increased heart period (HP) and increased HP variability. Unfortunately, few studies have examined subjective emotional experience, HP variability, and fitness simultaneously. As part of a larger study, 64 participants (31 males) were selected to represent high active and low active individuals exposed to a variety of laboratory stressors. Emotional state assessed with a 14-item questionnaire and HP variability assessed in the time domain (using mean successive differences, MSD) were measured at baseline and in response to a visual search task, a forehead cold pressor task, and a combination of the two stressors. At baseline, high active subjects exhibited higher HP and greater HP variability. Moreover, high active and low active participants differed in emotional state assessed using multivariate analysis. Subsequent univariate analyses indicated that high active subjects reported greater serenity (3.7 vs. 3.1) and relaxation (4.4 vs. 4.0), and less stress (1.1 vs. 1.6) than did low active subjects, ( $F(1,58) = 4.74, 4.04, \& 14.38$ , respectively, all  $p$ 's  $< .05$ ). Finally, across all subjects greater HP and greater MSD were associated with less reported stress, ( $r = -.27$ ,  $p = .017$ , and  $r = -.23$ ,  $p = .041$ , respectively). These results suggest that emotional state and vagal input to the heart may covary as a function of physical activity.