

# DIFFERENCES IN CORTISOL WITH VARYING LEVELS OF PATTERNS OF ANGER EXPRESSION DURING A PERIOD OF TEACHER- IDENTIFIED HIGH STRESS IN ELEMENTARY SCHOOL TEACHERS

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## Cortisol, Anger, Stress

**Purpose:** Elevations in cortisol have been associated with stress and consequent immunosuppressive effects leading to disease and illness. While the associations of cortisol and stress have been studied, few studies have examined the association of cortisol and anger, particularly the expression of anger, during a period of high stress. Further, little research has examined the situation specific effects of anger on cortisol. The purpose of this study was to determine if there are situation-specific differences in cortisol with varying patterns of anger expression in a group of elementary school teachers during a period of teacher-identified high stress.

**Method:** A descriptive comparative design was employed to address the purpose. A convenience sample of 86 (81 females and 5 males) 1<sup>st</sup> through 5<sup>th</sup> grade teachers who were full-time, had completed one year in the classroom and who gave consent were enrolled in the study. As part of a larger study, teachers provided salivary specimens for cortisol and completed the State-Trait Anger Expression Inventory (STAXI-2) twice, once considering the school situation and once considering situations outside the school or in general. The STAXI-2 has 5 subscales which assess patterns of anger expression: anger expression-in, anger-expression-out, anger control-in, anger control-out, and anger expression index. Data were analyzed with descriptive statistics and ANOVAs for each gender. The patterns of anger expression were divided into tertiles of high, moderate, and low patterns of anger expression based on the possible range of scores for each of the patterns.

**Findings:** Teachers were a mean age of 37.5 years and had taught for a mean of 11 years. The majority had a master's degree. Differences in cortisol in high, moderate, and low outside of school situations anger control-in groups were noted in female teachers. Female teachers with low levels of anger control-in in situations outside the school environment has significantly higher cortisol levels than individuals with high levels of anger control-in. Differences in cortisol in female teachers were also noted among high, moderate, and low anger control-out groups outside of school situations. Teachers with low Anger Control-Out scores in outside of school situations had higher cortisol levels than those with high Anger Control-Out scores. Finally, differences in cortisol levels were noted among high, moderate, and low anger expression groups outside of the school situations in female teachers. Female teachers with high Anger Expression Index scores in outside of school situations had higher cortisol levels than either moderate or low groups. No differences in cortisol were noted among anger expression-out or anger expression-in patterns.

**Discussion:** Cortisol has been linked to stress in various studies. These findings suggest that cortisol may also be linked to the level of various patterns of anger expression in specific situations. Interventions to help individuals express anger effectively may also affect cortisol levels.