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Affective verbal learning in hostility: An increased primacy effect and bias for negative emotional material

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Abstract

The current experiment examined the effects of hostility and a pain stressor on affective verbal learning. Participants were classified as high or low hostile and randomly assigned to a cold pressor or a non-cold pressor group. The subsequent effects on acquisition of the Auditory Affective Verbal Learning Test [AAVLT; Snyder, K. A., & Harrison, D. W. (1997). The Affective Verbal Learning Test. *Archives of Clinical Neuropsychology*, *12*(5), 477–482] were measured.

As expected, high hostiles learned negative emotional words significantly better than they learned positive words. Additionally, high hostiles were impaired in their acquisition of verbal material relative to low hostile participants. A significant primacy effect for negative emotional words and an overall better recall of negative information was also found. These results support the idea that high hostiles differ from low hostiles in a number of modalities and demonstrate the persistence of negative emotional material. Future work should address the implications these results have on high hostiles in daily interactions.
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The influences of negative emotion on health, behavior, and cognition have been investigated in a number of experiments (e.g., Frasure-Smith, Lesperance, & Talajic, 1993; Shenal & Harrison, 2003; Shimojima et al., 2003; Sirois & Burg, 2003). In the context of this research, hostility has arisen as one of the most examined emotional constructs due to its correlation with the development of cardiovascular disease (CVD). Behaviorally, hostility is described as an attitude that motivates aggressive behavior towards objects and people (Spielberger et al., 1985). It is a negative emotional trait that encompasses cynicism, suspiciousness towards others, and proneness to anger (Prkachin & Silverman, 2002). Physiologically, high hostility may result in over activation of the sympathetic nervous system (Keefe, Castell, & Blumenthal, 1986) and hyper-reactivity to environmental (Frederickson et al., 2000) and laboratory stress (Demaree & Harrison, 1997a).

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While the traditional approach to hostility is examination of physiological reactivity to stress, an emerging line of research has focused on the neuropsychological underpinnings of hostility. High hostile individuals are noted to display decreased performance on design fluency (Williamson & Harrison, 2003), dichotic listening (Demaree & Harrison, 1997a), and facial affect perception (Herridge, Harrison, Mollet, & Shenal, 2004). Further, in a facial affect perception task, Harrison and Gorelczenko (1990) found that high hostile participants identified significantly more neutral faces as angry, suggesting a negative emotional bias in the identification of facial affect.

Hostility's influence on a number of laboratory tasks underscores the need to further investigate how the trait may influence real-world interactions and clinical treatment of individuals with hostility disorders. Affective learning and communication are an important part of daily interactions with the self and others. The documented negative bias in the visual modality suggests that high hostile individuals may perseverate on and seek out negative information. This may lead to increased learning, comprehension, and expression of negative emotion. Moreover, the noted increased reactivity to stress may divert cerebral resources away from cognition in order to regulate blood pressure (BP) and heart rate (HR). Negative reactions to stress may further diminish the ability to perceive positive affect. These aspects of hostility may be particularly important for clinicians. In a clinical setting, patients with hostility disorders may inaccurately perceive the clinician as negative, thus exacerbating the hostility disorder and reducing the likelihood of an effective therapeutic intervention.

The current experiment sought to explore the relationship between hostility, stress, and emotional learning through the use of the Auditory Affective Verbal Learning Test (AAVLT; Snyder & Harrison, 1997). The AAVLT measures the ability to learn neutral, positive, and negative word lists. Investigations of the AAVLT have revealed that list learning differs as a function of affective valence. A number of experiments (e.g., Demaree, Shenal, Everhart, & Robinson, 2004; Everhart & Demaree, 2003; Everhart, Demaree, & Wuensch, 2003; Synder & Harrison, 1997) have indicated that the negative list produces an increased primacy effect, while the negative list produces an increased recency effect. Neurophysiological differences during learning of the negative list of the AAVLT are also evident in the literature. Everhart and Demaree (2003) found that low alpha power within the parietal regions is significantly reduced during negative list learning.

Recently, the effects of hostility on the AAVLT have also been investigated. Demaree et al. (2004) found no significant effects of hostility on learning the AAVLT; however, in a related study Everhart et al. (2003), found significant differences in brain activation in high and low hostiles during learning of the negative list. Specifically, low hostiles evidenced reduced low alpha power during negative list learning relative to high hostiles. The authors speculate that differences in brain activation during negative list learning might reflect trait differences in response to negative affect. A goal of the current experiment was to re-examine hostility's role in negative learning. For verbal learning data, it was predicted that high hostile participants would have difficulties learning the neutral and positive lists relative to low hostile participants; however, on the negative list high hostiles were expected to outperform low hostiles due to evidence of a negative emotional bias in hostility. In accordance with previous research, a primacy effect for the negative list and a recency effect for the positive were predicted.

A second goal of the experiment was to examine the relationship that pain stress may play in hostility and affective verbal learning. Pain stress was induced using a cold pressor.[1] In both groups, it was thought that the cold pressor would facilitate negative emotional learning by inducing a stressful pain state in participants. This effect was expected to be the largest in the high hostile group.

The final goal of the experiment was examine self-awareness in hostility. Previous research has linked hostility with a lack of self-awareness (Demaree & Harrison, 1997b). It is thought that diminished self-awareness contributes to habitual hostile attributions of others. On the behavioral level, understanding how hostility is manifested during interpersonal interactions is of utmost importance. In order to assess this aspect of hostility, participants were asked to predict how many words they thought they would recall from the first trial of each list. It was hypothesized that hostiles would either under- or over-predict their performance.

In order to increase the homogeneity of variance, only men were recruited for participation. Although controversial, evidence suggests that sex differences in emotional processing (Crews & Harrison, 1994; Harrison, Gorelczenko, & Cook, 1990) may exist.

[1] The cold pressor was also included to examine group differences in physiological reactivity to stress. Hypotheses, recording procedures, and the data regarding the physiological measurements are reported elsewhere.

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