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Effects of trait dominance on psychological and cardiovascular responses to social influence attempts: the role of gender and partner dominance

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Abstract

This study investigated the influence of trait dominance on cardiovascular reactivity to and recovery from a dyadic interaction task requiring active social influence attempts. Thirty-six male and 36 female normotensive high-school students characterized as either high or low in trait dominance engaged in a mixed-gender discussion with a high or low dominant partner. Trait dominance substantially influenced cardiovascular reactivity to the interpersonal stressor. High dominant participants displayed higher increases in systolic blood pressure (SBP) and pulse pressure (PP), but lower diastolic elevations than low dominant participants. The difference in diastolic reactivity was particularly pronounced in females. Recovery from stress was influenced by level of partner dominance. Participants interacting with a dominant partner showed delayed diastolic recovery. The observed cardiovascular effects seem to reflect greater task engagement and efficient coping in dominant subjects. Group differences in cognitive task appraisals and affective experiences are consistent with this interpretation. Differences in psychological responding were not found to mediate the relation between trait dominance and cardiovascular responses, however.

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1. Introduction

It is well established that the type of situational demand exerts a substantial influence on the magnitude and patterning of cardiovascular responses. In

particular, the task typology of active vs. passive coping (Obrist, 1981) has been demonstrated to correspond to distinct cardiovascular adjustments. Active coping, or effortful attempts to exert influence over outcomes has consistently been found to produce large, beta-adrenergically mediated, increases in systolic blood pressure (SBP) and heart rate (HR) without a necessary increase in diastolic pressure

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(DBP). Cardiovascular responses accompanying the passive tolerance or endurance of a stressor appear to be mediated via alpha-adrenergic pathways indicated by enhanced DBP reactivity and smaller SBP or HR effects (Hartley et al., 1999; Sherwood et al., 1990). The myocardial effects of active coping situations exceed metabolic demands (Carroll et al., 1986) and are considered to primarily reflect energy mobilization and task engagement (Obrist, 1981; Wright, 1996). In agreement with this interpretation, cardiac activity was found to be moderated by factors that are likely to influence performance motivation, such as intermediate task difficulty (Smith et al., 1990; Wright et al., 1998), incentives (Gramer and Huber, 1996; Smith et al., 1989) and evaluative observation (Kelsey et al., 2000).

Recent research suggests that task engagement in active coping conditions may also be moderated by personality traits involving individual differences in the motives to display active and controlling behavior, such as trait dominance (Gramer, 2003) or assertiveness (Tomaka et al., 1999). The cardiovascular impact of dominant behavior has been demonstrated by studies noting pronounced, sympathetically mediated SBP and/or HR reactivity in situations requiring effortful attempts to influence interaction partners or social equivalents of active coping (Gramer and Huber, 1996; Smith et al., 1996, 2000). Investigations that directly assessed the influence of trait dominance on cardiovascular reactivity are few in number, but at least among men, available data suggest enhanced cardiac influences in high dominant subjects, indicated by elevated SBP reactivity (Gramer, 2003; Newton et al., 1999), whereas the responses of submissive subjects seem to be characterized by relatively greater vascular or DBP effects and enhanced distress (Gramer, 2003). Submissive men were also noted to display slower habituation of cardiovascular responses during task performance (Gramer and Huber, 1997; Rejeski et al., 1989) and less complete DBP recovery (Gramer, 2003).

Interpersonal circumplex accounts of personality consider trait dominance as an aspect of agency, a metaconstruct that involves strivings for mastery and power (Lippa, 2001; Helgeson and Fritz, 1999). A body of research has related agency to greater psychological well-being and reduced distress (Helgeson, 1994). Consistent with these findings,

the cardiovascular correlates of trait dominance mentioned above seem to suggest a more adaptive stress-related response for high compared to low dominant subjects (Dienstbier, 1989; Tomaka et al., 1993). This interpretation, however, contradicts empirical findings that found dominant behavior to be related to coronary heart disease (CHD) and all-cause mortality (Houston et al., 1992; Houston et al., 1997). Research on nonhuman primates and human subjects indicates that the psychosomatic risk of dominant behavior may partly be determined by environmental characteristics. In dominant primates, enhanced risk was confined to unstable social environments that demand recurring efforts to assert the social position (Seeman and McEwen, 1996; Shively et al., 2000). Among human subjects, interacting with a dominant partner was found to be related to enhanced DBP reactivity (Newton et al., 1999; Brown et al., 1998). Thus, demanding environmental conditions might disrupt the effective coping pattern of dominant individuals.

A main purpose of the present study was to further evaluate the moderating influence of trait dominance on cardiovascular and psychological responses to social influence attempts. Some research indicates gender differences in the effects of socially dominant behavior, with males exhibiting greater task engagement and cardiac reactivity to social influence attempts than females (Smith et al., 1996, 1998). Findings on trait dominance and gender are less consistent and seem to differ across task demands and contextual features. A mixed-gender discussion task that required to arrive at a mutual decision but did not necessarily involve the assertion of differing opinions was found to elicit greater task engagement in males, indicated by enhanced SBP reactivity. A challenge of dominance status during a debate with a female confederate was found to exert strong effects on both SBP and DBP responses of dominant females (Rejeski et al., 1990), which might be interpreted as vascular reaction (Uchino and Garvey, 1997). This result could not be replicated in dominant males, however (Rejeski et al., 1989). The cardiovascular effects of partner dominance largely appear to be comparable across genders (Newton et al., 1999), although they might sometimes be more pronounced in females (Brown et al., 1998). To further address the issue of generalizability across genders, male and female subjects

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