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Journal of Psychosomatic Research 58 (2005) 43–49

Journal of Psychosomatic Research

Domain-specific anger expression and blood pressure in an occupational setting

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Received 16 June 2003; accepted 20 April 2004

Abstract

Objective: The purpose of the present study was to extend a previous work in a sample of American undergraduates demonstrating the effects of situational factors on reported anger expression behavior and blood pressure. **Method:** General and domain-specific anger expression behavior and subjective work stress were assessed in 218 nurses from the Frankfurt am Main metropolitan area using the original and three altered versions of the State Trait Anger Expression Inventory (STAXI) and the Job Stress Survey (JSS). The altered versions of the STAXI asked for individuals' anger expression at home, during free time, and at work. Blood pressure and heart rate (HR) were measured in the field during working breaks. **Results:** Women had higher scores on anger-out and lower on anger-control in the original and in the home version of the STAXI, but no sex difference was found in the work version. Participants scoring high on anger-out at work displayed elevated blood pressures and HR compared with those scoring low on this scale. High job stress was associated with greater reports of anger-in and anger-out behavior. **Conclusion:** The results suggest that the way people express stress at their work place might be an important factor in determining the impact of experienced stress on cardiovascular health.

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Keywords: Anger; Anger expression; Blood pressure; Hypertension risk

Introduction

Maladaptive anger-coping behavior has been thought to be associated with elevated cardiovascular activation and heightened risk for cardiovascular diseases [1–5]. However, reported results related to this hypothesis are rather heterogeneous. Some authors found an anger suppressive coping style to be related to heightened cardiovascular activation and, consequently, greater risk for cardiovascular diseases [6–10], while others reported greater cardiovascular activation and disease risk for persons with an open anger expressive coping style [11–14]. Finally, in a prospective study, extreme tendencies of both anger-in and anger-out were associated with heightened blood pressure and hypertension status [5]. The current status of evidence suggests the possibility that moderating variables influence the association between anger expression style and blood pressure.

We recently introduced a procedure that assesses anger expression style in three domains: at home, at work, and during free time. We have found that individuals adapt their anger expression style according to situational requirements with decreasing open anger expression from the home setting over free time to the work setting [15]. Results for anger suppression and anger control pointed into the opposite direction, with increasing scores for both styles from the home domain, over free time to the work domain. Furthermore, we found that only an open anger expression style at work was reliably associated with heightened blood pressures. Individuals scoring high on anger-out at work displayed higher SBP and diastolic blood pressure (SBP

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0022-3999/04/$ – see front matter © 2005 Elsevier Inc. All rights reserved.
doi:10.1016/j.jpsychores.2004.04.370

and DBP, respectively) levels during rest and during acute stress than those scoring low on anger-out at work. The study indicates that situational circumstances are important in determining the direction of anger expression (i.e., outward or inward; [15]).

This study, however, was conducted with relatively young, healthy American students, and it was conducted in a laboratory setting. Hence, it was not clear whether results can be generalized to occupational settings. Furthermore, it was not clear what psychological mechanisms might mediate the influence of situational factors on anger expression and the association between open anger expression style at work and heightened blood pressure. One of the proposed mechanisms is that greater work strain might be common to both an open anger expression style at work and a heightened blood pressure.

An interdependent relationship between emotional factors, environment setting, and job strain is hypothesized in many studies. Theorell et al. [16] assessed blood pressure, emotion, and job strain in female nurses at work and during leisure time. They reported significant correlations between job strain and DBP, but only during work hours, and no relationship between mood and job strain. Similarly, van Egeren [17] found greater SBP at home and at work for workers reporting high job strain compared with those with low job strain. Differences between low- and high-job-strain employees in DBP, however, were evident only at work, and the effect of job strain on blood pressure was the same for both Types A and B men and women. Matthews et al. [18], however, reported that men and women with high work strain experienced more negative emotion compared with those with low-work-strain positions, but they did not find differences in ambulatory blood pressure. These findings indicate a complex association between job strain, mood, and blood pressure.

The purpose of the present study was to investigate the extent to which the previously reported association between an open anger expression style at work and elevated blood pressure can be replicated in an occupational field setting. We also examined the extent to which work stress influences anger expression and blood pressure. We predicted that high job stress would be associated with greater anger expression and greater blood pressure. Moreover, in the previous study, we found that women reported more anger-out at home than men do, while men reported more anger-out at work than women do. An additional aim for this study, therefore, was to examine whether these differences generalize to an occupational setting.

Method

Participants

In this study, complete data were available from 228 volunteers, of whom 182 (80%) were female. Participants were recruited from two nurse-training institutions, two hospitals, and one nursing home in the Frankfurt am Main metropolitan area. Occupational status ranged from trainee to nursing director, but all participants were at least on a half-time position for more than 1 year. Their age ranged from 18 to 55 years ($M = 34$, S.D. = 9). A t test did not indicate a significant difference in age between men and women [$t(226) = 0.03$; $P = .98$]. Furthermore, 72% of the sample were married, 20% single, and 8% were divorced or living separated; 48% of the sample were living together with children and 46% were smokers. Chi^2 tests did not indicate any significant differences between men and women in these variables. Furthermore, the sexes did not differ in the distribution of their professional status or their educational background. The only significant difference between men and women was found for BMI [$t(226) = 2.87$; $P < .01$]. which, as would be expected, was higher for men ($M = 23.3$, S.D. = 1.54) than for women ($M = 22.23$, S.D. = 2.40). With the exception of being on oral contraceptives, individuals who were on medication or who were suffering from an acute or chronic illness were excluded from participation. Worker unions were informed and agreed to the investigation.

Questionnaires

Participants' general and domain-specific anger expression styles were assessed using the original and modified versions of the State Trait Anger Expression Inventory (STAXI [10]; German version: [19]). The anger expression part of the STAXI consists of three independent dimensions: anger-in, anger-out, and anger-control, each represented by eight items. The items are statements that people may use to describe their behavior when they are feeling angry or furious. In the directions of the original version, individuals are asked to indicate, on a four-point scale, how often they *generally* react or behave in the manner described by each item. These directions were slightly altered to inquire for participants' reaction or behavior "at home", "at work", and "during free time" (for more details, see Ref. [15]).

Job stress was assessed using the German version [20] of the Job Stress Survey (JSS) of Spielberger and Vagg [21]. This instrument consists of 30 items describing stressful job events. Individuals have to rate each event twice. First, they have to rate how stressful an event is, then they rate how often this event happened to them during the last 6 months. These two ratings are to be multiplied, and the product term divided by 30 represents an individual's subjective stress at work.

The openness scale of the Freiburger Persönlichkeits Inventar (Freiburg Personality Inventory, FPI; [22]) was administered as a measure for an individual's preparedness to report negative attitudes and behaviors. Originally, this scale consists of 12 items to which individuals can agree or not agree. However, we eliminated two items that were highly similar to the items of the STAXI ("Sometimes, I have said nasty things about others" and "Often, I am threatening others

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