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Social Support as a Moderator of the Aftereffects of Stress in Female Psychiatric Inpatients

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This study was designed to assess the impact of social support on poststressor cognitive impairment, with the goal of providing a laboratory test of the buffering hypothesis of social support. High or low support was operationalized as the warm or the neutral behavior of an interviewer, which preceded the experimental stressor, high or low task load Subjects were 32 nonpsychotic female psychiatric inpatients The predicted interaction was found on a poststressor anagram task. The performance of low-task-load subjects was not markedly affected by the interview condition, whereas high-task-load subjects performed significantly better in the warm interview condition. Heart rate data also supported the hypothesized buffering role of support.

The buffering hypothesis suggests that social support moderates or buffers the impact of stressful events on mental and physical health. The relationship is most frequently assumed to be interactive, with the buffering value of support maximized during stressful times. The presence or absence of support is thought to have a limited effect during periods of low stress (Cohen & McKay, 1984). For example, Nuckolls, Cassel, and Kaplan (1972) found that neither stressful life events nor psychosocial assets measured early in pregnancy was significantly related to subsequent delivery complications. When both variables were considered conjointly, however, women with high life-change scores and high psychosocial assets had only one third the number of complications of those with high life-change scores and low psychosocial assets. Those with low life-change scores were not differentiated by psychosocial assets. These data are consistent with a number of other naturalistic studies that suggest that better mental and physical health is associated with higher levels of support (Brown, Bhrolchain, & Harris, 1975; DeAraujo, van Arsdel, Holmes, & Dudley, 1973; Lin, Simeone, Ensel, & Kuo, 1979).

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Unfortunately, this type of naturalistic research does not permit the evaluation of equally plausible alternative hypotheses, particularly those that involve the direction of causality. For example, Heller (1979) has argued that competent persons are most likely to be able to withstand the adverse effects of stress, and are also more likely to have well-developed social networks because of their interpersonal skills. Furthermore, the amount of support reported may be confounded by preexisting psychological dysfunction; depressed individuals may be less likely to describe their environment as supportive than those who are less depressed (Heller, 1979).

Additional problems in naturalistic research on the buffering hypothesis include the lack of any reliable and well-validated measures of social support (Thoits, 1982) as well as the wide variability in the type of stressors encountered by subjects. Moreover, social support may vary as a function of stressful life events. Many stressful life changes produce changes in social support networks; for example, a move may limit access to previous sources of support (Thoits, 1982).

Although naturalistic research has obvious value, the greater control possible in laboratory studies may help clarify some of these important conceptual issues. For example, using relatively brief stressors such as task load and noise, a number of researchers have demonstrated reliable poststimulation effects, including transient cognitive impairment (Cohen, 1980). Despite these well-documented poststimulation deficits, there is frequently little or no difference in subject groups' performance on cognitive tasks during the actual presentation of the stressor, and the initial physiological differences between high- and low-stress conditions usually disappear by the end of stressor exposure. This well-researched paradigm provides a good model for assessing the potential buffering role of support on poststimulation performance and arousal under controlled laboratory conditions

Female psychiatric inpatients were used as subjects in this study because as a group they have smaller support networks than does the general population (Mueller, 1980) We reasoned that the results of a support manipulation were more likely to be evident in a sample that had relatively low baseline levels, if support were indeed an important moderator of reactions to stress.

High or low support was operationalized as the warm or the neutral behavior of an interviewer. This manipulation of support immediately preceded the experimental stressor, high or low task load. We predicted that the results on the aftereffects measures would provide support for the interactive buffering hypothesis; that is, the interview condition would have a limited effect when task load was low, whereas the differences between warm and neutral conditions would be maximized for high-task-load subjects. Physiological measures were included to provide data on the extent to which support had a potential buffering effect on arousal.

Method

Selection of Subjects

The subject population was composed of women who had recently been admitted to the short-term, inpatient psychiatric section of a university teaching hospital Potential participants were designated by an experienced clinical psychologist on the staff, after reviewing their charts and their routine-admission Minnesota Multiphasic Personality Inventory (MMPI) and Shipley Institute of Living test data Criteria for inclusion were (a) a nonpsychotic diagnosis, (b) a valid and nonpsychotic MMPI, (c) a Shipley IQ score of at least 90, (d) no recent or concurrent use of psychotropic medication, and (e) the absence of any extenuating factors (e g., acute distress that contraindicated participation)

A total of 44 women between the ages of 18 and 42 years were approached and were asked to participate during the first week after admission Seven women declined, and three were unavailable at the scheduled time, equipment problems resulted in the dismissal of two The remaining 32 women were randomly assigned to the four experimental conditions The average age of the subjects was 28 years

Procedure

A female experimenter who was blind to the subject's potential group assignment approached the subjects and gave both written and verbal explanations of the research, prior to obtaining written consent At that time participants also completed the short form of the Beck Depression Inventory (BDI, Beck & Beck, 1972) and the state portion of the State–Trait Anxiety Inventory (STAI, Speilberger, Gorsuch, & Lushene, 1970) These provided immediate measures of affective states that might influence both cognitive and physiological responses

As in past aftereffects research, subjects were told that there were two experiments (Glass & Singer, 1972). In the "first study" the experimenter was supposedly interested in the effects of different kinds of noise on concentration and physiological arousal The "second experiment" was supposedly to provide normative information on the aftereffects tasks

Several hours later another female confederate, blind to the upcoming interview condition, escorted the subjects to the experimental room as previously scheduled This confederate was carefully coached to remain neutral and to avoid conversation On arrival in the experimental room subjects heard a tape recording that described the physiological leads as they were attached, as well as the upcoming 6-min baseline (Meyers & Craighead, 1978)

Warm and neutral interviews The male experimenter entered the room for the first time after the baseline was completed He explained that he would be asking some general background questions, inasmuch as people's reactions to noise are influenced by their previous experiences As the male interviewer left the observation room, the female experimenter shut off the intercom and turned her back to the one-way window, thereby remaining blind to the interview condition throughout the experiment.

The male experimenters were carefully trained to administer interviews that could be reliably rated as warm or neutral At the beginning of a warm interview, the experimenter smiled, shook the subject's hand, and introduced himself by his first name He smiled at appropriate points throughout the interview and maintained good eye contact between brief notations of answers Periodically he shared some information about himself (e.g , if a subject said that she preferred small towns, he might add that he felt the same way)

In the neutral interview condition he maintained a businesslike, emotionless style that was not cold, sarcastic, or angry He did not shake the subject's hand when he entered the room, and he introduced himself as Mr ______ He avoided most opportunities for eye contact by focusing his attention on his question sheet and by busily noting responses

The interview questions for both conditions were identical The questions were a mix of demographic (size of hometown, number of siblings, etc) and preference questions (e.g , kind and amount of television and radio time) that had been selected for reasonable face validity for the supposed investigation of reactions to noise

Task load manipulation After the male experimenter completed the 7-min interview, he left the room The subject then heard a tape recording that gave directions for the upcoming number slides and "noise," and included examples to check comprehension

The number slides contained pairs of nine-digit numbers, and were presented via a Kodak Carousel projector The subject's task was to say whether the two parts of the pair were the same or different The slides were changed according to a predetermined schedule, regardless of when or if the subject answered In the low-task-load condition the slides were presented at variable intervals ranging from 7 to 10 s, compared to 3 to 7 s in the high-task-load condition The total duration for the slides was 15 min for both groups of subjects, based on pilot work with this population, which demonstrated that significant differences between conditions could be produced with this minimal stressor exposure time

The low-task-load background noise was soft white noise For the high-task-load subjects the auditory stimulus was a number tape, which presented random numbers at the rate of one per s Also, at variable intervals of 5 to 20 s the word *tap* was interspersed, which meant that the subject was supposed to ring the bell taped to the arm of her chair Increased attentional demand (information rate) has been shown to adversely affect performance on aftereffects tasks (Cohen, 1980) Headphones were used to present the noise, with the volume for both conditions set at normal conversational levels

There were brief pauses 5 and 10 min after the slides began to check blood pressure and to provide false feedback Each subject was told at these times and at the end of the slides that her performance was better than 66%, 68%, or 71% of subjects, following the feedback procedure described by Cohen and Spacapan (1978) This provided a control for potentially different perceptions of success or failure as a function of high or low task load

Aftereffects measures Following the number slides the female experimenter administered the Stroop Color–Word Interference Test (Jensen & Rohwer, 1966) Subjects named the color (red, orange, yellow, blue, green) in which an incongruent color name was printed (e g , if the word *red* was printed in green, the subject was to say *green*) There were two control cards, one with the color names in black, and one with colored circles, on which subjects named the colors There were 100 words or circles on each card The dependent measure was a speed score that was computed by adding the time spent reading the black and white words and naming the colors of circles to the Stroop color-naming time (Jensen & Rohwer, 1966)

After subjects completed the Stroop test, the anagram task was explained to them, and an easy four-letter example was provided Similar to those used in previous research, 15 solvable five-letter anagrams were presented on slides to each subject All anagrams had the same letter sequence (Hiroto & Seligman, 1975) and were taken from Tresselt and Mayzner (1966) If subjects failed to solve an anagram within 90 s, the trial ended and the next anagram was presented Instructions were taken from Gatchel and Proctor (1976) and included the mention of a possible pattern or principle The three anagram response variables were those used in previous research (Hiroto & Seligman, 1975) (a) mean solution time for the 15 anagrams, (b) number of unsolved anagrams (failures), and (c) trials to criterion for anagram solution, operationalized as three consecutive solutions in less than 15 s each

Postexperimental questionnaire After completion of the anagram task the female experimenter returned to the experimental room to remove the physiological leads and hand the subject the postexperimental questionnaire The subject was told to seal it in the attached envelope after completion and leave it in the box where there were a number of identical envelopes The directions guaranteed anonymity and asked for frank responses, which would not be shown to the experimenters Color-coded underlining of the instructions was used to separate the questionnaires into the appropriate conditions for data analysis

As in previous research, subjects rated the degree to which they found the noise in the first experiment distracting, unpleasant, frustrating, mentally fatiguing, and physically fatiguing on 9-point scales (Cohen & Spacapan, 1978) The subjects rated the behavior of the male experimenter on a 9-point scale from *cold, unfriendly* (1) to *warm, friendly* (9) with the midpoint of *neutral* (5) A similar scale was used to evaluate their degree of liking for the male experimenter They also rated their own performance on the number slides to evaluate the efficacy of the false feedback

Physiological Recordings

A Narco Bio-Systems Physiograph model MK-IV was used to record heart rate, skin resistance, and blood pressure from baseline through the end of the Stroop test Recordings were not used during the anagram tasks because of the great variability in solution times and the unknown time course of the poststimulation effects of the stressor (Cohen, 1980) The physiological data were analyzed separately for the baseline and for each of the three experimental segments (i e , the interview, stressor, and Stroop, as in previous research, Glass, Reim, & Singer, 1971)

Beckman 16-mm Ag/AgCl electrodes were attached to the thenar and hypothenar eminences of the subject's nondominant hand to record skin resistance A constant voltage of 0 5 V was passed across the surface of the palm during recording The electrode paste was made following the formula of Fowles et al , (1981)

Sample readings of the minimum skin resistance within each 30-s period of the interview, slides, and Stroop provided data on tonic skin conductance (SC) levels (Glass et al , 1971) These readings were transformed into reciprocal conductance units, producing skin conductance data expressed in micromhos Heart rate (HR) was monitored using a Narco Bio-Systems photoelectric plethsymographic transducer attached to the volar surface of the distal phalanx of the third finger of the subject's nondominant hand Heart rate was recorded for the second, fourth, and sixth minutes of the interview, and for the first 30 s of each minute during the number slides Heart rate was also recorded during the first 30 s of the Stroop black-and-white word card, the first 45 s of the colored-circle card, and the first 75 s of the Stroop color–word card, these time periods represented the minimal common time period across all subjects for each card In each case HR-change scores were computed by converting HR to beats per minute and subtracting the HR baseline

Problems with blood pressure equipment invalidated much of these data However, blood pressure was measured with all subjects to maintain consistency in the protocol

Experimenters

Five female and three male undergraduates served as experimenters during the course of the study. Each subject had contact with one male and two females, the female experimenter who explained the study and solicited participation, and the female experimenter who ran the subject. All experimenters wore white laboratory coats, in keeping with the medical setting.

Results

Subject Characteristics

The most frequent diagnosis in this subject sample was adjustment disorder, the primary diagnosis given to 12 of the subjects. Primary diagnoses for the remaining subjects included dysthmic disorder ($n = 6$), eating disorder ($n = 5$), episodic alcohol abuse ($n = 3$), histrionic personality ($n = 2$), conversion disorder ($n = 1$), dependent personality ($n = 1$), anxiety disorder ($n = 1$), and phobic disorder ($n = 1$). Subjects in the larger diagnostic categories were distributed across the four subject groups.

Subjects had an average of 12.02 years of education ($SD = 1.63$). The majority of the subjects were single ($n = 11$) or separated or divorced ($n = 11$); only 10 were married and living with their spouses. Over half of the subjects were not working outside of the home (7 were housewives, 5 were students, and 6 described themselves as unemployed). The occupations of the remainder fell into the categories of skilled manual employees, clerical and sales workers, or technicians. There were no obvious discrepancies in the distribution of demographic variables across subject groups.

Data from the Shipley, BDI, STAI, and MMPI were analyzed using the two independent variables to check the adequacy of randomization as well as to provide additional information on the degree of distress in the subject population. There were no significant differences among groups. Subject means were 106.44 ($SD = 7.66$) on the Shipley, 11.91 ($SD = 7.97$) on the BDI, and 24.50 ($SD = 7.53$) on the state portion of the STAI. There were no significant main effects or interactions on those MMPI scales that are most responsive to distress (scales F, 2, and 7), or and/or potentially maladaptive interpersonal sensitivity or need for approval (scales K, 6, 8, and 0). As is characteristic of newly admitted nonpsychotic inpatients in this facility, the mean T scores on all of the MMPI clinical scales were between 70 and 90.

Table 1
Means and Standard Deviations of "Noise" Ratings as a Function of Task Load

	Task load			
	Low		High	
Experimenter warmth	*M*	*SD*	*M*	*SD*
Distracting				
Neutral	4.38	2.13	5.88	1.96
Warm	3.38	1.92	6.00	2.72
Unpleasant				
Neutral	3.75	1.67	6.03	1.92
Warm	4.37	1.85	4.88	1.96
Frustrating				
Neutral	3.62	2.19	5.12	2.94
Warm	3.00	2.45	5.25	2.60
Mentally fatiguing				
Neutral	3.88	1.96	4.25	2.25
Warm	3.06	2.56	5.75	1.91

Experimental Manipulations

The noise in the first study was rated as significantly more mentally fatiguing, $F(1, 28) = 4.10$, $p < .05$, more distracting, $F(1, 28) = 6.97$, $p < .01$, more unpleasant, $F(1, 28) = 4.40$, $p < .05$, and more frustrating, $F(1, 28) = 4.27$, $p < .05$, in the high-task-load conditions than in the low-task-load conditions. There were no significant main effects as a function of interviewer warmth for these variables, with all four Fs < 1. Similarly, the interactions between experimenter warmth and task load did not reach significance for the extent to which the noise was mentally fatiguing, $F(1, 28) = 2.36$; distracting, $F(1, 28) = 0.52$; unpleasant, $F(1, 28) = 1.78$; or frustrating, $F(1, 28) = 0.17$. The means and standard deviations for these variables are shown in Table 1.

The subjects' self-ratings of physical fatigue did not differ significantly as a function of task load or warmth, Fs < 1, or their interaction, $F(1, 28) = 1.08$. There were not significant differences between subjects' self-ratings of their performance as a function of task load, $F(1, 28) = 3.05$; interviewer warmth, $F(1, 28) = 1.94$; or the interaction of these two variables, $F < 1$. Mean ratings were 6.17 ($SD =$

1.79) for subjects in the low task load, neutral interview group; 7.50 (SD = 2.95) for subjects in the low task load, warm interview condition; 5.75 (SD = 2.96) for the high task load, neutral interview group; and 5.63 (SD = 2.32) for the high task load, warm interview group

Warm and neutral interview conditions were rated as significantly different by subjects $F(1, 28) = 20.52, p < .0001$, without significant effects as a function of task load or the interaction between interview warmth and task load, Fs < 1. The mean rating of the male experimenter's warmth in the warm interview conditions was 8.19 (SD = 1.58), compared with 5.98 (SD = 1.19) for the neutral condition. Additional evidence for the success of the manipulation was provided by the narrow range of scores; only one subject rated the male experimenter's degree of warmth as lower than the neutral midpoint of 5.

Rated degree of liking for the male experimenter paralleled the ratings of warmth, $F(1, 28) = 11.39, p < .002$, with the warm interviewer receiving a mean rating of 7.94 (SD = 0.91), in contrast to a mean of 6.19 (SD = 1.72) for the neutral interview condition. Task load did not significantly affect the ratings, nor did it interact with the interview condition, Fs < 1.

As in Cohen and Spacapan (1978), the number comparison task was included as a means of manipulating task load, so that comparisons across high- and low-task-load groups would have been inappropriate. However, comparisons of the warm and neutral conditions were made separately within the high and low task groups, using the number of errors within each of the three segments. In the low-task-load group there was a significant main effect for change across trials, $F(2, 28) = 5.22, p < .01$. The mean for the first 5-min segment was 3.75 (SD = 3.82), compared to 2.75 (SD = 4.32) and 2.81 (SD = 4.45) for the second and third segments, respectively. Neither the main effect for experimenter warmth, $F(1, 14) = 1.15$, nor the interaction between warmth and change over trials, $F(2, 28) = 1.15$, was significant

The pattern was very similar for the high-task-load subjects. Subjects made fewer errors as they progressed through the number comparisons, with a mean of 9.01 (SD = 6.64) for the first segment, in contrast to a mean of 8.12 (SD = 8.05) for the second segment, and 5.69 (SD = 4.25) for the third. This change across the three trials was significant, $F(2, 28) = 4.16, p < .03$. Neither the main effect for experimenter warmth, $F < 1$, nor the interaction, $F(2, 28) = 1.14$, was significant.

Aftereffects Measures

The interaction between task load and interviewer warmth did not reach significance on the Stroop score, $F(1, 28) = 2.89, p < .10$, although the data were in the expected direction. The main effects for task load, $F(1, 28) = 0.10$, and interviewer warmth, $F(1, 28) = 0.90$, were nonsignificant.

As predicted, there was a significant interaction between interviewer warmth and task load for average solution time, $F(1, 28) = 5.18, p < .03$. The main effects for task load, $F(1, 28) = 1.18$, and interviewer warmth, $F(1, 28) = 0.06$, were nonsignificant. These data are shown in the left panel of Figure 1. The low task load, neutral interview group had a standard deviation of 17.73 compared to 14.68 in the low-task-load, warm interview group; 12.51 in the high-task-load, neutral interview group; and 12.78 in the high-task-load, warm interview group. The Waller-Duncan Bayes exact test (Waller & Duncan, 1969) was used in the post hoc analysis of this interaction. There was a nonsignificant difference between the warm and the neutral conditions in the low-task-load condition, $F < 1$, in contrast to a significant difference between warm and neutral groups in the high-task-load condition, $F(1, 28) = 4.21, p < .05$.

The number of unsolved anagrams followed a similar pattern, with a significant interaction between the two independent variables, $F(1, 28) = 4.15, p < .05$. There were nonsignificant main effects for task load, $F(1, 28) = 3.01$, and for interview warmth, $F(1, 28) = 0.32$. These data are shown in the right panel of Figure 1. The standard deviations were 1.90 in the low-task-load, neutral interview group; 2.89 in the low-task-load, warm interview group; 3.46 in the high-task-load, neutral interview group; and 2.02 in the high-task-load, warm interview group In the post hoc analyses of this interaction, warm and neutral groups did not differ significantly in the low-task-load condition, $F < 1$. The differences between the warm and neutral group approached significance in the high-task-load condition, $F(1, 28) = 2.95, p < .10$.

The interaction and main effects for the third anagram variable, number of trials to criterion, were not significant, with all $Fs < 1$. However, more than half of the subjects were never able to reach the criterion, producing substantial variability in the data on this measure.

Physiological Measures

Initial HR and SC analyses included subjects' scores on the BDI and the state portion of the STAI as covariates, because anxiety and depression have previously been shown to affect autonomic reactivity. The only significant relationship found was between the BDI score and the SC measure, so that only the BDI score was used as a covariate in subsequent SC analyses.

Baseline Initial analyses evaluated the efficacy of randomization on baseline HR and SC There were not significant group or interaction differences for baseline heart rate, or for the SC baseline

Interview The interview analyses included only the interview condition, because the task-load manipulation had not yet been introduced. There was not a significant difference in HR between the warm and the neutral interview conditions, $F(1, 30) = .51$; the SC difference was also nonsignificant, $F(1, 29) = .02$.

Slides The HR and SC data were analyzed using a repeated measures analysis of variance, which permitted the assessment of the main effects attributable to the two major grouping variables, change over the three trial blocks, and the interactions among these variables. The task-load manipulation had a significant main effect on HR during the stressor, $F(1, 28) = 4.49$, $p < .04$. High-task-load subjects had significantly higher HR means during the stressor, with a mean change from baseline of 5 84 ($SD = 4.35$), compared to 2.08 ($SD = 3.49$) for the low-task-load group. The main effects for interviewer warmth, $F(1, 28) = 1.32$, change over trials, $F(2, 56) = 1.90$, and the interactions of the three independent variables, $Fs < 1$, were nonsignificant

There was a similar response pattern for SC during the stressor period. Task load had a significant impact on skin conductance levels, $F(1, 28) = 5.69$, $p < .03$ High-task-load subjects had a SC mean of 8 79 ($SD = 5.76$), compared to 6.15 ($SD = 3.67$) for the low-task-load subjects. The overall decrease in SC across the three trials approached significance, $F(2, 56) = 2.52$, $p < .08$. The main effect for interviewer warmth and the interactions among the independent variables were nonsignificant.

Stroop There was a significant interaction between task load and interviewer warmth in the HR data from the Stroop, $F(1, 28) = 4.92$, $p < .05$. The means and standard deviations for the four groups are shown in Table 2. The main effects for task load, $F(1, 28) = 1.41$, and interviewer warmth, $F(1, 28) = 1.64$, were not significant Post hoc analyses (Waller & Duncan, 1969) showed significant differences between the warm and neutral interview groups in the high-task-load condition, $F(1, 28) = 3.33$, $p < .05$, in contrast to a nonsignificant difference in the low-task-load condition, $F < 1$.

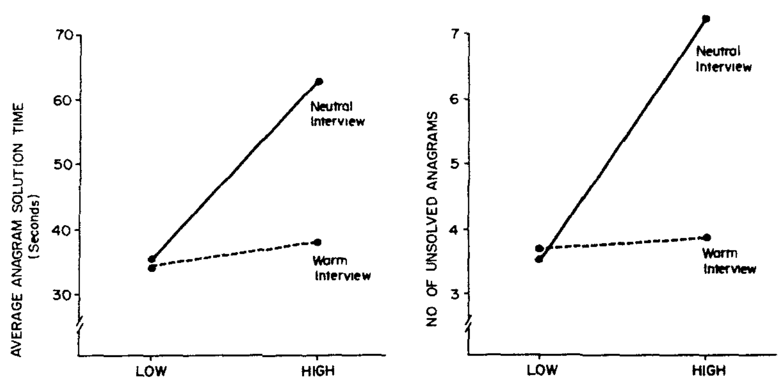

Figure 1 Left-hand panel Mean number of seconds for solution of anagrams Right-hand panel· Mean number of unsolved anagrams

Table 2
Means and Standard Deviations of Heart Rate Changes From Baseline During the Stroop Test

Interviewer warmth	Task load	
	Low	High
Neutral		
M	2.87	6 97
SD	1 58	2 48
Warm		
M	3.37	3 25
SD	2 01	2 16

Note Stroop test = Stroop Color–Word Interference Test

SC data had a somewhat different pattern from those of HR on the Stroop. There was a main effect for task load, $F(1, 27) = 7.40$, $p < .01$, with high-task-load subjects having a mean of 8.59 ($SD = 4.32$), compared to 4.82 ($SD = 4.76$) for low-task-load subjects. The interaction between interviewer warmth and task load approached significance, $F(1, 27) = 2.54$, $p < 12$.

Discussion

We found that a brief neutral or warm interview can differentially affect some aspects of subsequent cognitive functioning and physiological arousal following a high-task-load stressor. In contrast, there was little apparent impact on performance following a low-task-load stressor in this female psychiatric inpatient sample. These significant interactions between task load and interviewer warmth on the anagrams task and on heart rate during the Stroop suggest that support can moderate some poststimulation effects of a high-task-load stressor.

These data have relevance for a major unresolved issue in the social support literature discussed earlier, the direction of causality. It has been unclear whether social support promotes good health or whether good health makes a person more likely to receive support (Heller, 1979). Our data suggest that support may have a buffering effect following a high-task-load stressor, in a population that is already relatively distressed Whether a similar buffering effect might be observed in nonclinical populations is unknown Moreover, these data obviously do not exclude the possibility that distress may influence the individual's ability to perceive, elicit, or utilize support, but suggest that support may enhance the functioning of distressed individuals under certain conditions.

The significantly greater physiological arousal associated with the high-task-load group throughout the stressor is different than most previous research, in which autonomic habituation has usually obscured differences between experimental groups (Cohen, 1980), with at least one exception (Glass et al., 1971) However, there are several major differences between this study and previous research, notably the use of tonic rather than phasic autonomic measures as recommended by Cohen (1980), the relative brevity of the stressor, and the use of psychiatric inpatients who, as a group, probably had higher initial levels of arousal as well as potentially greater reactivity to the stressor than the undergraduate subjects used in most of the previous aftereffects studies.

The relatively high initial level of distress in our psychiatric sample may also have affected performance on the Stroop. Optimal Stroop performance is associated with the ability to inhibit or narrow attention, with unexcitable subjects performing the best (Jensen & Rohwer, 1966). The further elevation of distress by the experimental stressor above the high baseline levels may have overshadowed the effects of the support manipulation, especially in view of the stressfulness of the Stroop task itself (Jensen & Rohwer, 1966). Skin conductance during the Stroop may have been similarly affected

Although we operationally defined social support as interviewer warmth in this study, there are other ways of describing the results of the interviewer warmth manipulation. For example, Lazarus, Kanner, and Folkman (1980) discussed two ways through which *positive arousal* from pleasurable emotional experiences might enhance subsequent performance. They suggested that positive arousal might stimulate effort on subsequent tasks, and/or might increase feelings of self-efficacy, thereby providing the impetus for additional effort on subsequent related or unrelated tasks.

The Lazarus et al. (1980) conceptualization is consistent with related discussions of possible processes in the social support literature. For example, Thoits (1982) has argued that the bolstering effect of social support on selfesteem and social identity should produce a direct or main effect on psychological disturbance. Findings from four studies (Turner, 1981) suggested that social support does in fact have positive effects on psychological well-being, as well as vice versa. DiMatteo and Hays (1981) suggested that caring and reassurance may affect health through the reduction of excessive emotional arousal. Future studies need to address the effects of different kinds of tangible and intangible support in different situations (Turner, 1981).

As the critical ingredients in support are clarified and the types of support that best fit particular kinds of people are better understood, it may be possible to design intervention and treatment programs for at-risk individuals (Heller, 1979). Although people cannot avoid experiencing stressful events, interventions that increase their ability to mobilize support may have some prophylactic value (Dean & Lin, 1977). In this regard, training in the necessary interpersonal skills needed to increase support from friends, relatives, or community agencies might provide some protection for persons with low support, against the time when they are likely to experience stressful events (Sarason, Levine, & Sarason, 1982).

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