

## State–Trait Anger Theory and the Utility of the Trait Anger Scale

Jerry L. Deffenbacher, Eugene R. Oetting, Gregory A. Thwaites, Rebekah S. Lynch, Deborah A. Baker, Robert S. Stark, Stacy Thacker, and Lora Eiswerth-Cox  
Colorado State University

Eight studies present support for state–trait anger theory. In Studies 1–3, high-anger participants reported (a) greater anger in many different provocations, in their most angering ongoing situations, and in daily life, (b) greater anger-related physiological arousal, (c) greater state anger and dysfunctional coping in response to a visualized provocation, and (d) greater use of suppression and outward negative expression of anger. Only heart rate in the visualized provocation did not support predictions. In Studies 4–5, high-anger individuals suffered more frequent and intense anger consequences. In Studies 6–8, trait anger had higher correlations with dimensions of anger than with other emotions, cognitions, and behaviors. Few gender differences were found across studies. Results were discussed in terms of state–trait theory, convergent and discriminant validity for the Trait Anger Scale, anger expression, gender, and the implications for counseling.

Although research on anger and anger reduction has lagged behind research on other emotional problems such as anxiety and depression, anger is beginning to receive greater attention in applied psychology. For example, an increasing amount of published research suggests that anger is a factor in health problems such as cardiovascular disease (e.g., Siegman & Smith, 1994), domestic violence (e.g., Leonard & Blane, 1992; Maiuro, Cahn, Vitaliano, Wagner, & Zegree, 1988; Pan, Neidig, & O’Leary, 1994), and substance abuse (e.g., Leibsohn, Oetting, & Deffenbacher, 1994) and that anger reflects a pattern of emotional distress associated with elevated angry emotionality, negative personal consequences, and other psychosocial problems (Deffenbacher, 1992). There is also a growing body of treatment research (e.g., Deffenbacher & Stark, 1992; Deffenbacher, Thwaites, Wallace, & Oetting, 1994; Moon & Eisler, 1983; Novaco, 1975) showing that general anger can be reduced. Anger research, however, has often suffered from theoretical, conceptual, and measurement confusion (Spielberger, Jacobs, Russell, & Crane, 1983). For example, too often the overlapping constructs of anger, hostility, and aggression have been blurred and used interchangeably, or anger as an emotional, experiential construct has not been separated from the behaviors or modes through which anger is expressed. Yet, if both theoretical and applied endeavors are to prosper, our theories need to articulate constructs clearly, to elucidate how these might be validated empirically, and to

develop reliable and valid means of assessing and evaluating these constructs.

In attempts to clarify and refine the understanding of anger, Spielberger and his colleagues (e.g., Spielberger, 1988; Spielberger et al., 1983; Spielberger, Krasner, & Solomon, 1988; Spielberger, Reheiser, & Sydeman, 1995) adapted state–trait personality theory to anger. State anger refers to a transitory emotional–physiological condition consisting of subjective feelings and physiological activation. Affectively, state anger is experienced along a continuum from little or no anger through mild to moderate emotions such as irritation, annoyance, and frustration to highly emotionally charged states such as fury and rage. Physiologically, state anger varies from little or no change in physiological arousal to marked sympathetic arousal, increased tension in facial and skeletal muscles, and release of adrenal hormones. State anger is thus an emotional–physiological condition that occurs in response to an immediate situation, varies in intensity, and fluctuates over short periods. Trait anger, on the other hand, refers to a stable personality dimension of anger proneness or the tendency to experience state anger. That is, high trait anger individuals experience more frequent and more intense state anger (Spielberger, 1988; Spielberger et al., 1983, 1988). Although recent writings on state–trait anger theory do not address response duration, earlier state–trait anxiety theory (e.g., Spielberger, 1966, 1972) suggests high trait anger individuals experience more lengthy state anger arousal as well. Trait anger, therefore, is thought to be a relatively stable individual difference in frequency, intensity, and duration of state anger.

In postulating trait anger as a broad personality disposition toward anger, state–trait anger theory leads to five general theoretical predictions. (a) Trait anger reflects a tendency to become more easily angered (the *elicitation hypothesis*; i.e., high-anger individuals should be more easily angered, which should be reflected in greater numbers of things that anger them and in greater frequencies of daily anger). (b) Trait anger reflects a tendency to respond with

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Jerry L. Deffenbacher, Eugene R. Oetting, Gregory A. Thwaites, Rebekah S. Lynch, Deborah A. Baker, Robert S. Stark, Stacy Thacker, and Lora Eiswerth-Cox, Department of Psychology, Colorado State University.

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Correspondence concerning this article should be addressed to Jerry L. Deffenbacher, Department of Psychology, Colorado State University, Fort Collins, Colorado 80523.

more intense anger when provoked (the *intensity hypothesis*; i.e., high-anger individuals should experience stronger anger reactions). (c) Because of greater intensities and frequencies of anger reactivity, high trait anger individuals are predicted to cope less well with anger and to express themselves in less positive, less constructive ways. That is, trait anger reflects a tendency to express anger in less adaptive and less functional ways (the *negative expression hypothesis*), which should be reflected in more frequent anger suppression and outward, negative expression of anger and less frequent application of constructive coping. (d) Because of greater frequencies and intensities of anger and because of less positive coping, high trait anger individuals are more likely to experience negative anger-related consequences. That is, trait anger reflects a tendency to experience more frequent or severe anger-related consequences (the *consequence hypothesis*). (e) If trait anger reflects a unique personality disposition toward anger and not other emotional traits, then trait anger should relate to anger-related constructs more powerfully than to constructs that do not involve anger (the *discrimination hypothesis*).

This article presents eight studies that address these five hypotheses. The purpose of this article, therefore, is to test central predictions of state-trait anger theory and to present evidence of convergent and discriminant validity for the Trait Anger Scale (TAS). The first five studies were also designed specifically to attend to the clinical relevance and utility of the TAS, that is, the value of the TAS in discriminating clinically meaningful anger groups by creating a high-anger counseling analog. This was done by employing a high-anger group that was not only normatively high on trait anger but also reported a personal problem with anger and an interest in seeking help for anger reduction. If the TAS has clinical utility, then the TAS should document that such a high-anger, help-seeking group, compared to low-anger individuals who report few problems with anger, should experience significantly more (a) anger, (b) maladaptive ways of expressing anger, and (c) negative consequences stemming from their anger expression. Moreover, in order to have high clinical utility, the TAS should also be shown to differentiate anger from other emotional and behavioral issues so that it is demonstrably a measure of anger, not a measure of general emotional problems and distress.

Study 1 employs a variety of methods to evaluate the elicitation, intensity, and negative expression hypotheses, that is, it tests whether high-anger individuals will experience more frequent and more intense anger reactions than low-anger individuals and whether they will express themselves in more dysfunctional ways. Studies 2 and 3 replicate and extend the findings of Study 1 by assessing effects of different provocations. Studies 4 and 5 extend theory testing to the area of anger consequences and test the proposition that high-anger individuals also experience more frequent and severe consequences from their anger (consequence hypothesis). Studies 6–8 continue to evaluate basic theoretical predictions, but also test the discrimination hypothesis that trait anger predicts anger-related phenomena better than it predicts other nonanger phenomena.

Studies in this article were conducted over an 8-year period, and the designs of each study emerged from questions, confounds, and issues stemming from prior studies. That is, as potential confounds and alternative theoretical premises were clarified, studies were developed to address those issues. All samples are independent of one another, except for the possibility that some of the students from the abnormal psychology class in Study 7 may have participated in one of the earlier studies that used introductory psychology students. The numbers of such students, however, is anticipated to be small and should introduce no significant bias. Participant pools from which samples were drawn were predominantly Caucasian (i.e., <5% non-Caucasian), and conclusions should be limited to this population. Additionally, given the large number of comparisons within some of these studies, in order to reduce experiment-wise error, alpha level was set at .05 for multivariate analyses of variance (MANOVAs), but post hoc between-group comparisons for the MANOVAs and various other between-group comparisons were adjusted with the Bonferroni correction. In this article, we present and briefly discuss the results for each study individually, with the major integration of findings in the general discussion at the end of the article. Moreover, because there is considerable overlap in the instrumentation and methodology of some studies, the Method sections of several studies have been condensed with reference to earlier sections in order to reduce redundancy and facilitate readability.

## Study 1

The elicitation, intensity, and negative expression hypotheses were tested by comparing a group of high trait anger college students who also self-identified as having personal anger problems and as being interested in seeking counseling for anger reduction with low-anger students who did not report personal anger problems. Specifically, it was predicted that high-anger individuals would show (a) a heightened vulnerability to elicitation of anger, which would be reflected in greater anger across a wide range of potentially provocative situations; (b) greater anger in ongoing situations that are uniquely angering to the individual; (c) greater frequency and intensity of anger in daily living; (d) more severe anger-related physiological symptoms; greater (e) physiological arousal, (f) state anger, and (g) dysfunctional coping when provoked; and (h) greater general tendencies to suppress anger and to express anger in an outward, negative manner. Resting blood pressure and pulse levels, and trait anxiety were also assessed.

## Method

### Participants

Participants were 89 introductory psychology students (*Mdn* age = 19) who were from the upper quartile of the TAS (TAS > 22) and who identified themselves as having personal problems with anger and as desiring counseling for those problems, or who were from the lower quartile of the TAS (TAS < 16) and who

indicated no problem with anger. By condition, 23 low-anger women, 22 low-anger men, 22 high-anger women, and 22 high-anger men participated. They received one of three required research credits for participation.

### Instruments

**Trait Anger Scale.** The TAS (Spielberger, 1988) is a 10-item, Likert-type (1 = *almost never* to 4 = *almost always*) scale on which participants reported how angry they generally felt. TAS internal consistency reliabilities range from .81 to .91 with highest reliabilities for college students (Spielberger, 1988). The TAS correlates positively with a variety of anger and hostility measures such as the Buss-Durkee Hostility Inventory and with various state anger measures (Spielberger, 1988), and discriminates high- from low-anger groups (Lopez & Thurman, 1986; Spielberger, 1988).

Instruments were selected to evaluate each of the eight predictions derived from state-trait theory. (a) Anger across a wide range of provocative situations was assessed by the 90-item Anger Inventory (AI; Novaco, 1975), on which participants indicate on a 5-point scale (1 = *not at all* to 5 = *very much*) how much anger would be experienced if the situation were encountered. The AI has internal consistency reliabilities ranging from .94 to .96, correlates moderately with other anger scales, and discriminates more from less angry groups (Deffenbacher, Demm, & Brandon, 1986; Novaco, 1975). (b) Anger in ongoing, personally angering situations was measured by the Anger Situation measure (Deffenbacher, Demm, & Brandon, 1986), which has participants describe in detail their most angering, ongoing situation and rate the intensity of anger in response to that situation on a 0–100 (0 = *no anger* to 100 = *maximal anger ever experienced*) scale. The Anger Situation has a 10-week test-retest reliability of .81 (Deffenbacher, Story, Brandon, Hogg, & Hazaleus, 1988) and modest correlations with other anger indexes (Deffenbacher, Demm, & Brandon, 1986; Deffenbacher & Sabadell, 1992). (c) Intensity and frequency of daily anger was assessed by the Anger Log (Deffenbacher, Demm, & Brandon, 1986), on which participants, every day for a week, described in detail and rated the intensity of the most provocative experience of the day (same 0–100 scale as Anger Situation). Three measures were derived from the Anger Log: mean daily intensities, the number of incidents during the week rated > 30 (i.e., the frequency of days with at least mildly angering events), and mean daily intensities for days rated > 30 (score of 30 was based on an earlier study of Hazaleus & Deffenbacher, 1986, which suggested this score indicated at least mild anger for most participants). The Anger Log correlates moderately with other person-specific anger measures (Deffenbacher, 1992). (d) Anger-related physiological arousal was evaluated by the Anger Symptom Index (Deffenbacher, Demm, & Brandon, 1986), on which participants describe their most common anger-related physiological reaction (e.g., shakiness or sweating) and rate symptom intensity on a 0–100 scale (0 = *no problem at all* to 100 = *symptom extremely severe*). The Anger Symptom Index has 10-week test-retest reliability of .85 (Deffenbacher et al., 1988) and significant correlations with other state and trait anger measures (Deffenbacher, Demm, & Brandon, 1986). (e) Physiological arousal following provocation was assessed by a self-monitored, 15-s pulse on the nondominant wrist or carotid artery immediately following the experimental provocation. Reliability for self-monitored pulse has been established through high correlations ( $r_s = .90-.93$ ) with mechanically recorded pulse rates (Hazaleus & Deffenbacher, 1986; Southard & Katahn, 1967). Validity for heart rate as a measure of arousal is found in significant correlations with state anger ( $r = .31$ ; Deffenbacher, Demm, & Brandon, 1986) and in

anger producing greatest change in cardiovascular measures compared to other emotions (Schwartz, Weinberger, & Singer, 1981). (f) State anger when provoked was measured by the 10-item State Anger Scale (SAS; Spielberger, 1988), on which participants rate items on a 1–4 (1 = *not at all* to 4 = *very much so*) scale based on feelings present in the experimental provocation (score = 10–40). Alpha reliabilities range from .88 to .95 with highest reliabilities for college students (Spielberger, 1988; Spielberger et al., 1983). The SAS correlates minimally with the TAS under neutral conditions (Spielberger, 1988) but to a greater degree under provocative conditions ( $r = .55$ ; Deffenbacher, Demm, & Brandon, 1986; Deffenbacher & Sabadell, 1992). The SAS gathered when the individual is provoked also correlates with other anger measures such as the AI and Anger Symptom Index ( $r_s = .60$  and  $.37$ , respectively; Deffenbacher, Demm, & Brandon, 1986). (g) Coping tendencies when provoked were assessed by the 6-item Coping Strategies measure (CS; Novaco, 1975), on which individuals indicate the probability (1–7 scale from low to high probability) of coping in the manner described in the item (two items each measure physical antagonism, verbal antagonism, and constructive coping). These two-item measures correlate with each other and state anger, and to a lesser degree with other anger measures (Deffenbacher, Demm, & Brandon, 1986; Deffenbacher & Sabadell, 1992). (h) General styles of expressing anger were measured by the Anger-In (AX-I) and Anger-Out (AX-O) scales of the Anger Expression Inventory (AX; Spielberger, 1988). AX-I and AX-O are 8-item, Likert-type (1 = *almost never* to 4 = *almost always*) measures of how individuals generally handle their anger by suppressing or holding anger in (AX-I) and by expressing anger outwardly (AX-O), typically in negative ways such as cursing or throwing things. AX alpha reliabilities range from .73 to .84 (Spielberger, 1988). AX-I is essentially uncorrelated with AX-O (Spielberger, 1988), and discriminant validity for the two measures is reflected in different patterns of correlations with anger, personality, and physiological variables (Deffenbacher, 1992; Lopez & Thurman, 1986; Spielberger, 1988).

**Resting blood pressure and pulse.** Resting blood pressure and pulse measures were taken on the Astropulse Model 90 Automatic Digital Electronic Blood Pressure/Pulse Monitor manufactured by Marshall Electronics, Skokie, Illinois. Readings are accurate within 3 mm Hg for blood pressure and 5% of pulse rates. Two readings were taken for each participant and averaged.

**Trait Anxiety Inventory.** The Trait Anxiety Inventory (TAI; Spielberger, Gorsuch, & Lushene, 1970) is a 20-item, Likert-type (1 = *almost never* to 4 = *almost always*) questionnaire on which participants report how generally anxious they feel. TAI has internal consistency reliabilities of .89–.90, test-retest reliabilities of .73–.86 over 3-week to 3-month intervals, and positive correlations with many other anxiety indexes (Spielberger et al., 1970).

### Procedure

The screening questionnaire was administered in five introductory psychology classes, each of approximately 150–200 students. This single-page questionnaire included the TAS, a place to indicate whether students believed they had a personal problem with anger and desired help for that problem, a place to indicate that students thought they had no personal problem with anger, and places for name, address, and telephone number should students wish to participate in studies on anger. Interested students scoring in the upper quartile of the TAS quartile and indicating a personal problem with anger and desiring help, or in the lower quartile of the TAS and indicating no personal problem with anger were assessed in groups of 10–20 in a small university classroom. After

informed consent procedures, students completed, in order, the AX, AI, TAI, Anger Symptom Index, and Anger Situation. While students were completing questionnaires, the experimenter, an advanced female graduate student who was unaware of the participant's anger level, randomly drew students to a back corner of the room and obtained resting pulse and blood pressure. When all had completed questionnaires and resting physiological measures, they were instructed in obtaining arterial pulse on the nondominant wrist or carotid artery. They practiced for 15-s intervals until all could do so proficiently. Then they were instructed to listen to an audiotape of a provocative scene, and taped instructions asked the participants to imagine themselves in the situation as if it were happening to them at the moment. The scene was modeled after Novaco's (1975) current political event scene and depicted an intense interaction at a party during which the individual is criticized and put down for his or her views on a current political topic (i.e., nuclear arms). Following a 2-min visualization of the scene, participants monitored and recorded their pulse (provoked heart rate). Then they completed the SAS and the CS regarding their reactions during the imagined provocation. Following the completion of state measures, participants were given the Anger Log and instructed in how to record the intensity of the most angering event of the day and how to return the log in a week and receive research credit.

### Results and Discussion

A  $2 \times 2$  (Gender  $\times$  Anger) MANOVA revealed significant multivariate effects for level of anger and gender,  $F(18, 68) = 26.01$  and  $2.70$ , respectively,  $ps < .01$ , but not for the interaction,  $F(18, 68) = 1.29$ . Significant univariate gender effects were found on two variables; men had higher systolic blood pressure and lower trait anxiety ( $Ms = 125.56$  and  $38.00$ , respectively) than women ( $Ms = 111.76$  and  $40.87$ , respectively),  $F(1, 85) = 27.71$  and  $10.54$ , respectively,  $ps < .01$ . Remaining findings are summarized in terms of anger level (Table 1). Theoretically predicted,

significant univariate anger main effects were found on all but heart rate after provocation and Anger Log frequency greater than 30. Moreover, even though the Anger Symptom Index only called for rating one symptom, a significantly higher proportion of high- (79%) than low- (21%) anger individuals spontaneously reported more than one symptom,  $z = 10.00$ ,  $p < .001$ , further reflecting greater perceived physiological involvement for high-anger individuals. In terms of anger expression style, high-anger participants reported greater tendencies to both suppress anger and negatively express anger. High-anger participants reported significantly higher trait anxiety as well.

Generally, results supported state-trait anger theory (Spielberger, 1988; Spielberger et al., 1983). For example, evidence for the elicitation hypothesis was found. The vulnerability to anger elicitation was reflected in the fact that high-anger participants reported that many different potential provocations elicited anger. The intensity hypothesis was also supported. High-anger individuals reported greater anger across many potential provocations, greater anger in idiographically defined ongoing situations, more intense anger on a day to day basis, more intense anger-related physiological symptoms, and elevated state anger in the experimental provocation. Only the hypothesized difference on heart rate when provoked was not found. The negative expression hypothesis also received support. High-anger participants became more verbally and physically antagonistic and engaged in less constructive coping in response to the imagined provocation and were more likely to outwardly and negatively express anger and to suppress their anger. Thus, many different findings converged to provide support for state-trait anger theory and validity for the TAS. Moreover, the clinical value of the TAS was demonstrated because not only were these predictions confirmed, but they were also confirmed in a group whose members were both

Table 1  
Means and Standard Deviations for High- and Low-Anger Groups in Study 1

Measure	Group				Univariate anger effect, $F(1, 85)$
	Low anger		High anger		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Anger Inventory	247.51	51.20	329.15	34.64	77.97*
Anger Situation	66.58	18.59	88.15	9.44	38.62*
Anger Log	31.44	22.36	48.35	19.00	17.32*
Anger Log-Frequency > 30	3.35	2.89	4.61	1.90	7.85
Anger Log-Intensity > 30	35.72	25.39	64.41	16.87	39.43*
Anger Symptom Index	49.84	20.82	73.43	14.95	33.56*
Provoked pulse/15 s	17.53	2.71	17.80	2.98	0.06
State Anger Scale	12.18	3.55	19.54	8.18	26.10*
Verbal antagonism	4.63	2.71	8.04	2.87	28.20*
Physical antagonism	3.42	1.62	6.26	3.28	22.30*
Constructive coping	10.42	2.15	8.35	2.79	9.92*
Anger Expression-In	16.39	4.24	18.95	4.54	11.25*
Anger Expression-Out	13.42	2.73	20.08	3.77	133.73*
Resting pulse/min	69.51	9.07	67.04	10.89	2.75
Systolic blood pressure	115.33	12.44	118.63	12.91	0.02
Diastolic blood pressure	79.95	9.71	76.33	9.54	2.66
Trait Anxiety Inventory	34.42	7.85	44.78	9.52	37.02*

\*  $p < .05$  (alpha level has been adjusted for experimentwise error).

high on anger and also perceived themselves as having a personal problem with anger and wanting help for that problem (i.e., a client analog).

Three other findings are worthy of note. First, high- and low-anger groups did not differ on resting pulse and blood pressure. This suggests that differences on the Anger Symptom Index and state anger during the provocation were not due to higher resting physiological arousal for high-anger students, that is, basal differences were unlikely to account for the findings. Second, gender was relatively unrelated to findings. There were no gender differences on anger measures, and there were no Gender  $\times$  Anger interactions, suggesting that high-anger men and women did not differ systematically on anger reactivity or anger expression. Third, high-anger participants reported more trait anxiety, a finding that suggests a closer link between trait anger and trait anxiety than might be expected.

### Study 2

Study 1 employed only a single situation in the experimental provocation, limiting the generalizability of results in terms of the type of provocations that elicit the theoretical differences between high- and low-anger individuals, that is, reactions to experimental provocation might, theoretically, be limited to a specific type of provocation. To address this specific limitation in generalizability, Study 2 replicated only the analog provocation portion of Study 1 but employed a very different type of provocation. If findings could be replicated with a different type of provocation, then generalization and confidence would be enhanced. It was predicted that high-anger individuals would show greater state anger, more verbal and physical antagonism, less constructive coping, and perhaps greater changes in heart rate than low-anger participants.

### Method

Thirty-six (19 men and 17 women) low-anger and 37 (18 men and 19 women) high-anger students (operationally defined as in Study 1) received one research credit for participation. With two exceptions, screening, recruitment, and provocation procedures were identical to the experimental provocation portion of Study 1. First, a different scene similar to Novaco (1975) was employed and

involved a rude grocery store customer who pushes past the individual and knocks his or her groceries to the floor without apology. Second, heart rate was self-monitored both prior to and following the experimental provocation. Otherwise, trait and state anger, self-monitored heart rate, and coping measures were identical to Study 1.

### Results and Discussion

A Gender  $\times$  Anger MANOVA revealed a significant multivariate effect for anger,  $F(6, 64) = 9.82, p < .001$ , but not for gender or the interaction,  $F_s(6, 64) = 1.74$  and  $1.08$ , respectively. Univariate anger effects (see Table 2) were found on all but physiological variables, replicating Study 1. High-anger participants again reported more state anger arousal, more physically and verbally hostile responses, and lessened facilitative responding. Only heart rate did not support predictions of state-trait theory. Again, both genders showed the same anger reactivity. Thus, this study demonstrated that the results of the prior study were not limited to a specific type of provocation, providing additional support for state-trait anger theory and the TAS.

### Study 3

Results of the first two studies and prior research (e.g., Deffenbacher, Demm, & Brandon, 1986) have shown that high-anger individuals report more frequent and more intense anger experiences, which state-trait anger theory says occurs because they possess a personality disposition to respond with anger to potentially frustrating or provocative situations. A personality variable, however, might not account for the findings, as it is possible that differences in frequency and intensity of anger in daily life occur not because high-anger individuals tend to react more with anger but because they encounter significantly different provocations. For example, if high-anger individuals are involved in intense antagonistic interpersonal relationships more often than low-anger individuals, then the frequencies and intensities of their anger could be higher as a result of frequent, anger-engendering encounters rather than a personality disposition toward anger. Similarly, high- and low-anger individuals may respond differently. For example, earlier results showed that they tended to cope with and

Table 2  
*Means and Standard Deviations for High- and Low-Anger Groups in Study 2*

Measure	Group				Univariate anger, $F(1, 69)$
	Low anger		High anger		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Resting pulse/15 s	18.00	2.54	17.49	3.32	0.66
Provoked pulse/15 s	18.86	2.51	18.68	3.41	0.11
State Anger Scale	21.69	6.58	28.70	7.70	16.86*
Physical antagonism	3.86	1.91	7.22	3.51	26.79*
Verbal antagonism	5.56	2.38	10.32	2.94	56.51*
Constructive coping	9.28	2.48	6.08	2.43	29.94*

\*  $p < .05$  (alpha level has been adjusted for experimentwise error).

express their anger in different ways, and they might differ in the types of physiological symptoms experienced as well. Study 3 explored these possibilities. Responses of high- and low-anger individuals on the Anger Situation, Anger Log, and Anger Symptom Index were analyzed to see if the situational sources of anger or the nature of reported physiological manifestations of anger were different for high- and low-anger students.

### Method

One hundred ninety-nine (82 men and 117 women) low-anger and 168 (83 men and 85 women) high-anger (operationally defined as in Study 1) students were recruited over four semesters. Each received one research credit for participation for completing the Anger Situation, Anger Symptom Index, and Anger Log (see Study 1 for description) in groups of approximately 20 in a small university classroom. Anger Situations, Logs, and Symptoms were categorized by one of the initial raters (Lora Eiswerth-Cox) according to a coding scheme developed by Deffenbacher, Eiswerth, and Stark (1986). Situational sources of provocation for Anger Situation and Anger Log measures were coded into one of the following nine categories: (a) family—anger stemming from an interaction with a parent, stepparent, sibling or other member of the individual's family; (b) interpersonal nonfamily—anger arising from interactions with people other than family members (e.g., roommates, friends, significant other, etc.) and with people not involved in school or work settings; (c) self—anger arising from the individual's own behavior, attitudes, or characteristics (e.g., performing poorly at some task and anger at self for oversleeping); (d) school—anger arising from interactions with fellow students, professors, and university personnel; from university policies and procedures; or from school-related responsibilities such as homework, timing of assignments, etc.; (e) work—anger elicited in the workplace involving work tasks or interactions with employers, supervisors, coworkers, or customers; (f) driving—anger arising from situations involving operating or being a passenger in a motor vehicle or riding a bicycle; (g) object—anger elicited in interactions with inanimate objects (e.g., malfunctioning car or computer); (h) other—a miscellaneous category for situations not fitting any of the above situations (e.g., anger at a pet or the weather); and (i) no anger reported—participants reported that they did not experience anger on a given day on the Anger Log. For some

analyses, driving and object categories were combined into the other category because of low sample size. Physiological responses on the Anger Symptom Index were coded into one of the following 10 categories: (a) sweating, (b) shaking (reports of shakiness or shaky feelings), (c) clenched jaw, (d) shoulder-neck-back tension (reports of tension in one or more of these areas), (e) fast pulse or heart pounding (reports of increased heart rate, palpitations, or both), (f) headaches, (g) high blood pressure, (h) flushed face (reports of blushing or feeling hot in the face), (i) clenched fist, and (j) other (symptoms not in prior categories, e.g., cold hands or upset stomach). If more than one symptom was mentioned, the symptom with the highest rating was coded. If two or more symptoms were listed with equally high ratings, the first symptom was coded. In the first semester, two advanced graduate students were trained to use the situational coding scheme for the Anger Situation and Anger Log and the symptom coding scheme for the Anger Symptom Index. Interrater agreement for categorizations was 98% for anger situations, 96% for log entries, and 99% for symptoms. During the last three semesters of data collection, one of the original raters (Lora Eiswerth-Cox) coded all protocols. Each semester, 25 protocols were randomly drawn and rated by Jerry L. Deffenbacher. Because rates of interrater agreement were as high as or higher than in the initial phase, rater reliability throughout the study was judged as satisfactory.

### Results and Discussion

A series of preliminary analyses revealed that gender was unrelated to findings, and data therefore were collapsed across gender. The general outcomes for the Anger Situation, the Anger Log, and the Anger Symptom Index replicated findings from Study 1. Specifically, high-anger students reported significantly more intense anger in their most angering, ongoing provocation, higher daily anger levels, and more severe anger-related physiological symptoms ( $M_s = 79.79, 45.78, \text{ and } 71.82$ , respectively) and than low-anger students ( $M_s = 60.76, 28.51, \text{ and } 49.33$ , respectively),  $F_s(1, 363) = 72.73, 143.54, \text{ and } 89.45$ , respectively,  $p_s < .001$ .

When Anger Situations were broken down by type of situation (Table 3), high- and low-anger participants did not differ by type of situation in which anger was experienced,

Table 3  
Means, Standard Deviations, and Percentages of Sample Endorsing Each Type of Most Angering Situation in Study 3

Type of situation	Group						Anger effect, <i>F</i>
	Low anger			High anger			
	%	<i>M</i>	<i>SD</i>	%	<i>M</i>	<i>SD</i>	
Interpersonal-NF	52.3	63.61	22.12	53.6	81.52	15.94	40.38*
Family	16.1	64.36	20.82	14.3	81.54	14.98	11.78*
Self	11.6	51.50	23.95	8.9	74.40	23.75	8.20*
School	7.0	45.36	24.14	5.4	67.78	29.90	3.93
Work	3.5	72.86	25.74	9.5	78.94	13.74	0.92
Other <sup>a</sup>	9.5	56.74	25.74	8.3	80.29	21.20	7.80

Note. Interpersonal-NF = interpersonal nonfamily.

<sup>a</sup> Driving and object categories were collapsed into the other category because of an insufficient number of responses.

\*  $p < .05$  (alpha level has been adjusted for experimentwise error).

$\chi^2(5, N = 367) = 6.63$ , but did differ in the level of anger experienced in those situations (Table 3). High-anger participants reported significantly higher anger in interpersonal nonfamily, family, and self-relevant contexts. High- and low-anger groups did not differ in intensity of anger related to work and school or "other" contexts, but these were endorsed by a relatively small number of participants. That is, for their most angering ongoing situations, high- and low-anger individuals did not differ in the types of situations reported, but high-anger individuals experienced more intense anger in nearly every type of situation.

When day-to-day angering situations were broken out by type of situation, the percentages of different sources of daily anger for high- and low-anger participants, respectively, were as follows: interpersonal nonfamily (40.2% vs. 31.5%), family (4.9% vs. 4.2%), self (17.4% vs. 21.3%), school (4.9% vs. 7.5%), work (3.4% vs. 2.5%), driving (2.7% vs. 2.2%), objects (4.3% vs. 4.2%), other (14.0% vs. 17.6%), and no anger logged on that day (8.1% vs. 15.5%). Given the very high numbers involved (i.e., a large number of participants with seven daily entries for each), even relatively small differences were statistically significant,  $\chi^2(8, N = 2543) = 60.72, p < .001$ . However, inspection of the data suggest that, in general, high- and low-anger individuals tended to report about the same proportions of different sources of daily provocation and that apparent differences primarily were due to more low-anger participants reporting no anger for the day and more high-anger individuals reporting anger in interpersonal, nonfamily situations. High-anger participants, however, reported significantly more intense anger in all categories than low-anger individuals (Table 4). That is, except for more low-anger individuals who reported no anger-involving incidents, high- and low-anger groups did not differ greatly in the kinds of provocative situations they encountered, but high-anger individuals experienced more anger in every type of situation. This finding is consistent with state-trait anger theory in that low-anger individuals are expected to experience lower levels of anger and therefore might be expected

to report more days in which no situation aroused a noticeable level of anger. High-anger participants were more likely to report interpersonal provocations that did not involve family, but otherwise, the types of situations that aroused anger were similar for high- and low-anger individuals, and high-anger participants reported more intense anger in nearly all types of day-to-day situations.

High- and low-anger groups did not differ significantly in the types of anger-related physiological symptoms described,  $\chi^2(8, N = 367) = 12.01$ , but did differ on the strength of their responses on many different symptoms (Table 5). High-anger participants reported more intense sweating, shakiness, clenched jaws, shoulder-neck-back tension, and elevated heart rate and heart palpitations. Because of the low response rates, the large mean differences in intensity of responses for reports of flushed face and elevated blood pressure were not significantly different. Serendipitously, the Anger Symptom Index provided additional information. Even though the measure asked for only one physiological reaction, some participants spontaneously gave and rated two or more symptoms. A significantly higher proportion of high- (33%) than low- (19%) anger participants reported more than one symptom,  $\chi^2(1, N = 367) = 8.30, p < .01$ , and the intensity of these secondary symptoms was also significantly greater for high-anger participants ( $M = 72.88$ ) than low-anger individuals,  $M = 54.82, F(1, 92) = 15.73, p < .001$ . Overall, high- and low-anger participants did not differ in the frequency with which they report different types of anger-related physiological responses but did differ in response intensity, with high-anger students reporting greater physiological involvement.

In summary, the predictions of state-trait anger theory held up, and the alternative possibilities did not. Although there may be differences not captured in the coding scheme employed, high- and low-anger individuals did not differ greatly in the types of situations that aroused anger. That is, high-anger participants did not seem to live in environments that presented different provocations but did appear to differ

Table 4  
Average Daily Anger Arousal as a Function of Type of Situation and Anger Status in Study 3

Type of situation	Group				Anger effect, $F^a$
	Low anger		High anger		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Interpersonal-NF	36.15	21.84	54.97	20.44	61.67*
Family	36.30	24.04	52.68	23.62	9.21*
Self	30.01	21.07	47.21	24.32	35.15*
School	32.15	24.42	50.73	24.57	15.36*
Work	30.09	21.56	46.65	24.31	33.50*
Other <sup>b</sup>	6.54	14.25	19.49	30.79	14.54*

Note. Interpersonal-NF = interpersonal nonfamily.

<sup>a</sup> When participants had more than one entry per category in a week's time, intensities were averaged over the number of entries and a single score was entered into the analyses, such that no person entered analyses more than once. <sup>b</sup> Driving and object categories were collapsed into the other category.

\*  $p < .05$  (alpha level has been adjusted for experimentwise error).



Table 5  
*Means, Standard Deviations, and Percentages of Sample Endorsing Type of Strongest Anger-Related Physiological Symptom in Study 3*

Type of symptom	Group						Anger effect, <i>F</i>
	Low anger			High anger			
	%	<i>M</i>	<i>SD</i>	%	<i>M</i>	<i>SD</i>	
Sweating	6.5	36.92	21.26	7.7	67.08	18.91	14.59*
Shakiness	7.5	47.33	24.85	13.7	78.00	12.64	25.28*
Clenched jaw	13.1	47.64	26.83	15.5	73.92	18.50	16.84*
SNB tension	18.1	50.58	22.27	13.1	69.82	22.01	10.28*
Fast pulse	19.6	54.13	26.64	15.5	75.39	19.42	12.20*
Headache	11.1	48.64	22.58	8.9	67.47	20.86	6.59
High blood pressure	4.0	46.63	14.35	4.8	66.14	21.04	4.20
Flushed face	9.0	45.28	22.39	4.2	57.14	21.38	1.45
Other	11.1	54.32	29.58	16.7	72.68	24.00	5.89

Note. SNB = shoulder-neck-back.

\*  $p < .05$  (alpha level has been adjusted for experimentwise error).

from low-anger individuals primarily in the level of anger experienced. The same was true for reported physiological symptoms; that is, high-anger individuals appeared to differ primarily in terms of the intensity of the physiological arousal, not in the type of responses.

#### Study 4

Studies 1–3 provided evidence suggestive of greater difficulties and negative consequences for high-anger individuals. For example, because high trait anger individuals experienced more frequent and intense anger, it is reasonable to predict that they may also experience more frequent and more severe negative outcomes or consequences from their anger. Their tendencies to cope with provocation via verbal and physical antagonism and with fewer constructive actions could exacerbate negative interpersonal interactions, thereby increasing the odds of interpersonal aggression and other negative outcomes. Greater tendencies toward negative outward expression of anger could result in greater probabilities of negative expressions and potential consequences to self, others, and property. Heightened psychophysiological responses to provocation and greater anger suppression could increase the probability of negative health consequences as well. In sum, it is reasonable to predict that the high trait anger individual's more intense and frequent anger, arousal and more dysfunctional ways of expressing and coping with anger could eventuate in more negative outcomes. However, it is also possible that although high-anger individuals experience more frequent and intense anger, they do not experience any different results or outcomes of their anger, that is, they might experience differences in emotional arousal and expression but not in the consequences of either the arousal or the expression thereof.

There is, however, very little research that directly addresses this negative consequence hypothesis of state-trait anger theory. Averill (1983) and Kassonov and Sukhodolsky (1995) reported that many individuals rated the outcomes of anger as positive. However, their findings were for

people in general and were not related to the person's trait anger level. Another study (Hazaleus & Deffenbacher, 1986) reported that high trait anger individuals experienced fairly severe negative consequences; however, participants were clients in a treatment study, and there were no comparative base rates of anger consequences in low-anger individuals. Desnoes and Deffenbacher (1995) included a low-anger comparison group, but findings were reported in terms of greater general life interference rather than adverse consequences per se. We found no research that addressed the frequency of fairly common anger consequences. Specifically, do high-anger individuals experience more negative anger-related consequences on a day-to-day basis? Study 4 addressed this question (consequence hypothesis) by comparing the frequencies with which high and low trait anger individuals' anger made them do, feel, or experience different consequences over a 2-month period. Addressing this question is not only important in terms of testing a theoretical extrapolation of state-trait anger theory but also important clinically in terms of the utility of the TAS as a tool that identifies individuals whose anger leads to adverse outcomes and who therefore may be in need of psychological assistance.

#### Method

Seventy-one (31 men and 40 women) low-anger and 72 (36 men and 36 women) high-anger students (operationally defined as in Study 1) received one research credit for completing an inventory of anger-related consequences constructed for this study, an instrument that was constructed because no measures of the frequencies of anger-related consequences were found in the literature. Based on interviews with high-anger participants in a pilot study, an inventory of 33 different anger-related outcomes (e.g., became depressed, hit someone, damaged a friendship, got drunk, etc.) was constructed. Participants completed this inventory of consequences by circling a number from 0 to 4 or more (a score of 4 or more was analyzed as a 4) regarding the number of times in the last 2 months that their anger led them to experience the consequence described by that item. Participants completed the inventory in groups of approximately 20 in a small university classroom.



### Results and Discussion

A TRYSYS key cluster variable analysis (Dean & Winters, 1991; Tryon & Bailey, 1966) on the consequence measure led to eight consequence clusters. Cluster content, items, and alpha reliabilities were as follows: (a) four items involving drug and alcohol use (drink alcohol, get drunk, and use other drugs;  $\alpha = .87$ ); (b) four items involving physical assault on others (feel like hurting someone, get into a physical fight, hurt someone, and hit someone;  $\alpha = .91$ ); (c) three items involving physical assault on objects (feel like breaking something, hit a wall or something, and break something;  $\alpha = .89$ ); (d) three items involving hurting self or being physically ill (hurt self physically, feel like killing self, and feel physically ill;  $\alpha = .71$ ); (e) two items involving verbal assault (get into an argument and say nasty things;  $\alpha = .63$ ); (f) six-items about experiencing negative emotions (feel bad about self, feel ashamed, depressed, withdrawn, feel dumb, and feel embarrassed;  $\alpha = .88$ ); (g) three items involving relationship problems (make friends mad at me, damage a friendship, and make friends afraid of me;  $\alpha = .77$ ); and (h) three items involving legal or vocational difficulties (trouble with the law, hurt my job, and get into an accident;  $\alpha = .76$ ). Six items had communalities less than .20 (e.g., fighting with family and overeating) and did not enter consequence clusters. Correlations among consequence clusters revealed that 22 of 28 formed modest, significant, positive correlations with  $r$ s from .15 to .40. Three correlations were significantly larger than this, that is, correlation of physical assault on others with physical assault on objects and with verbal assault ( $r$ s = .61 and .50) and of negative emotions with hurting self or feeling physically ill ( $r = .47$ ). Three correlations were nonsignificant, that is, the correlation of negative emotions with physical assault on others and on objects and with legal or vocational consequences ( $r$ s = .01, .08, and .12, respectively). Overall, these correlations suggest a moderate relationship among the frequencies of negative anger-related consequences, yet independence enough among types of consequences to allow meaningful comparisons as a function of gender and anger level.

Means and standard deviations for consequence clusters are presented in Table 6. A Gender  $\times$  Anger MANOVA on the consequence clusters revealed significant multivariate gender, anger, and interaction effects,  $F$ s(8, 132) = 5.87, 12.61, and 4.36, respectively,  $p$ s < .001. Univariate Gender  $\times$  Anger interactions were found on consequence clusters involving drugs and alcohol, physical assault on people, physical assault on property, hurting one's self, and verbal assault,  $F$ s(1, 139) = 5.11, 22.49, 15.22, 8.29, and 4.16, respectively,  $p$ s < .05, and were explored further with Tukey post hoc tests. When the alpha level was adjusted for experimentwise error, differences involving drugs, alcohol, and verbal assault were no longer significant. For consequences involving hurting one's self, high-anger men reported negative consequences more often than low-anger women, whereas both high and low anger women did not differ significantly from either male group. For consequences involving physical assault on others and property, high-anger men reported a significantly higher frequency of these consequences than other groups, which did not differ among themselves. Gender effects for assault on persons and property primarily were due to the effects of high-anger men, as noted previously. Women more frequently reported negative emotions stemming from their anger than did men. Univariate anger effects were found for all consequence cluster scores, save hurting one's self and legal or vocational consequences (Table 6). That is, high-anger students reported that their anger led them to greater use of drugs and alcohol, more frequent physical assault on others and on property, greater verbal assault, more negative emotions, and more relational difficulties. As noted above, however, anger's main effects on physical assault on others and property were heavily influenced by the higher levels reported by high-anger men. Even though the item "fight with family" did not enter a consequence cluster, data for this item are presented because of their implications for family distress and turmoil. A univariate anger effect was found,  $F(1, 139) = 14.70$ ,  $p < .001$ , with high-anger individuals ( $M = 1.92$  for women and 2.31 for men) reporting more

Table 6  
Means and Standard Deviations for Frequency of Anger Consequences in Last 2 Months for High- and Low-Anger Groups in Study 4

Consequence	Group								Univariate anger effect, $F(1, 139)$
	Low anger				High anger				
	Men		Women		Men		Women		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Drugs-alcohol	4.52	2.93	4.95	2.80	8.36	4.54	6.08	3.72	17.23*
Assault-people	4.68	1.14	4.70	1.38	10.17	4.70	5.64	2.66	44.88*
Assault-objects	4.00	1.61	3.75	1.79	8.25	4.01	4.42	2.79	28.67*
Hurt self	3.39	0.80	4.23	1.49	4.97	2.69	4.14	1.27	6.66
Assault-verbal	4.00	1.63	4.75	2.22	7.75	2.30	7.08	1.99	76.63*
Negative emotions	10.39	4.03	14.45	6.01	15.33	7.38	17.50	6.33	15.13*
Relationship	3.54	1.67	3.65	1.17	5.72	2.96	5.28	2.88	24.29*
Legal-school	3.23	0.62	3.05	0.22	3.53	3.05	3.13	0.42	1.13

\*  $p < .05$  (alpha level has been adjusted for experimentwise error).

fights with family members than low-anger participants ( $M = 1.23$  for women and  $1.60$  for men).

High-anger individuals experienced significantly more frequent adverse consequences as a result of their anger. Moreover, these were robust findings, as anger effects were found for nearly all consequences, confirming the negative consequences hypothesis of state-trait anger theory. These conclusions, however, must be qualified by the significant gender by anger interactions for consequences related to physical assault on people and on property, in which high-anger men experienced greater numbers of adverse consequences than other groups. Overall, however, results supported the extension of state-trait anger theory to the frequency of negative consequences as high-anger individuals suffered significantly more frequent adverse outcomes from their anger.

### Study 5

Study 4 found that high-anger individuals experienced more frequent anger-related consequences but did not determine whether they experienced more severe negative consequences. Study 5 addressed this possibility by assessing the severity of anger consequences in the individual's two worst anger incidents in the last year. The worst anger-related incidents in the last year were chosen for two reasons. First, choosing the most significant anger-involved events provided for the necessary range of outcome severities, which might not be found for more frequently occurring consequences. Second, a year period provided an opportunity for significant events to occur and yet allowed participants to be able to recall detail with reasonable accuracy.

### Method

Ninety-two (40 men and 52 women) high-anger and 102 (48 men and 54 women) low-anger students (operationally defined as in Study 1) received one research credit for completing the Anger in the Last Year Questionnaire, which was developed for this study. In a pilot study, 175 students in abnormal psychology described, in writing, their two worst anger-related incidents in the last year and listed consequences resulting from their anger. Seven types of consequences were identified from these lists: (a) physical damage to self (anger resulted in bodily damage or disease to himself or herself), (b) physical damage to others (anger resulted in bodily damage or disease to another person), (c) physical damage to objects (anger led to physical destruction of or damage to property), (d) relationship damage (anger interfered with, damaged, or terminated one or more of his or her relationships, except for relationships in school or work settings), (e) vocational or school problems (anger led to difficulties with relationships or performance at school or work), (f) legal consequences (anger culminated in involvement with police, courts, or quasi-legal systems such as campus disciplinary processes), and (g) damage to self-esteem (anger resulted in negative feelings about or interpretations of self). Because consequence descriptions in the pilot study were not sufficiently detailed to allow for ratings of their severity, the format was modified to solicit more thorough consequence descriptions. In the revised Anger in the Last Year Ques-

tionnaire, participants first described, in detail, the worst anger event in the last year. Then for each type of consequence listed above, they indicated whether it had occurred or not, and if it had, they described the consequences in detail. After responding to all specific consequences, participants rated on a 5-point scale (0 = *no cost*, 1 = *a little*, 2 = *somewhat*, 3 = *very*, 4 = *extremely*) how costly the incident was, all things considered. This process was then repeated for the second most anger-involved incident in the last year.

Consequences were coded for severity on a 0–3 scale (0 = *no consequence*, 1 = *mild*, 2 = *moderate*, 3 = *severe*), except for damage to self-esteem, for which moderate and severe categories were collapsed because of the inability to distinguish clearly between them based on information supplied by participants. Categories were anchored to specific characteristics or parameters (e.g., ratings for physical damage to self or others involved the number of symptoms suffered, amount of pain reported, the level of medical attention involved, and the nature and lasting characteristics of physical problems). To increase reliability and standardization of judgments, (a) consequence categories were as mutually exclusive as possible, (b) only actual outcomes were rated (i.e., even though behavior could potentially lead to more severe consequences, only the consequences actually experienced were coded), and (c) when consequences were vague, incomplete, or open to multiple interpretations, raters coded the less severe consequence level. Interrater reliability (Pearson  $r$  of one rater's severity score with another rater's severity score for the consequence category) was established by having three people, two of the authors and a female political science undergraduate student who was unfamiliar with the project, independently code 100 questionnaires from the present data set (25 drawn randomly from each of the four male–female, high–low anger combinations). The undergraduate rater was given the Consequence Rating System manual and approximately three hours of training by one of the authors. Interrater reliabilities were high for all consequence categories, ranging from .88 to 1.00 ( $Mdn r = .94$ ). Leibsohn et al. (1994) found similar interrater reliabilities when applying the same coding system to alcohol-involved consequences. Because reliabilities were uniformly high in this and other studies, one author (Gregory A. Thwaites), who was one of the coders in the establishment of interrater reliability and who was unaware of participant anger level and gender, coded the remaining consequence protocols within the next week's time.

### Results and Discussion

Separate  $2 \times 2$  (Gender  $\times$  Anger) MANOVAs for each anger incident (Table 7) revealed significant multivariate main effects for anger,  $F_s(7, 185) = 7.99$  and  $5.12$ , respectively,  $ps < .001$ , but not significant interactions,  $F_s(7, 185) = 1.03$  and  $0.57$ , respectively. The multivariate gender effect was significant for the worst anger incident,  $F(7, 185) = 2.80$ ,  $p < .01$ , but not for the second incident,  $F(7, 185) = 1.87$ . Univariate analyses of the gender effect on the most anger-involved incident revealed no significant differences, however. Univariate analyses of the multivariate anger effects (Table 7) showed that in the worst incident, high-anger participants reported more severe consequences in all categories, except for work or school problems, legal consequences, and self-esteem. In the second most anger-involved situation, high-anger individuals experienced more damage to relationships, self-esteem, and overall costs. Le-

Table 7  
Severity of Anger Consequences by Gender and Anger Status in Study 5

Consequence	Group								Univariate anger effect, <i>F</i> (1, 191)
	Low anger				High anger				
	Men		Women		Men		Women		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Most anger-involved incident in last year									
Physical-self	0.34	0.81	0.27	0.17	0.60	0.84	0.49	0.85	10.58*
Physical-other	0.09	0.47	0.04	0.19	0.52	0.99	0.19	0.59	10.26*
Physical-objects	0.23	0.71	0.06	0.23	0.66	1.09	0.33	0.78	10.19*
Relationships	0.80	0.98	1.25	1.02	1.79	1.13	1.93	1.18	28.85*
Work-school	0.50	0.95	0.44	0.81	0.74	1.09	0.74	1.09	3.64
Legal	0.02	0.15	0.00	0.00	0.13	0.59	0.05	0.31	2.43
Self-esteem	0.48	0.70	0.73	0.71	0.81	0.81	0.86	0.80	4.60
Overall cost	0.75	0.87	0.95	1.03	1.72	1.32	1.72	1.24	28.57*
Second most anger-involved incident in last year									
Physical-self	0.16	0.48	0.24	0.77	0.34	0.85	0.26	0.66	0.94
Physical-other	0.00	0.00	0.07	0.42	0.19	0.62	0.09	0.43	2.68
Physical-objects	0.25	0.75	0.09	0.48	0.51	1.05	0.30	0.64	4.59
Relationships	0.86	1.07	1.20	1.03	1.36	1.21	1.84	1.04	12.93*
Work-school	0.23	0.68	0.42	0.88	0.38	0.88	0.72	1.16	2.98
Legal	0.00	0.00	0.00	0.00	0.04	0.28	0.00	0.00	0.84
Self-esteem	0.23	0.42	0.35	0.55	0.59	0.80	0.84	0.81	19.55*
Overall cost	0.61	0.81	0.82	0.88	1.64	1.49	1.77	1.77	36.78*

\*  $p < .05$  (alpha level has been adjusted for experimentwise error).

gal consequences were seldom reported and were dropped from subsequent analyses.

From the above analyses, it is difficult to determine if anger effects were due to a few high-anger individuals reporting very severe consequences, to more high-anger individuals reporting mild consequences, or both. To explore these issues, the proportions (Table 8) of individuals reporting some type of consequence in a category (i.e., persons with ratings  $> 0$ ) were compared, and the intensity of these consequences analyzed by  $2 \times 2$  (Gender  $\times$  Anger) analyses of variance (ANOVAs; Table 9). For the worst anger-involved incident, greater proportions (Table 8) of high-anger participants experienced a negative consequence in all categories, except for work or school problems and damage to self-esteem. For the second incident, significantly higher proportions of high- than low-anger participants experienced consequences in all categories, except for work or school consequences and physical damage to self. When participants who did not report a consequence were dropped from analyses for the worst incident, ANOVAs revealed no significant gender or gender by anger interactions, but demonstrated anger effects on relationship damage and overall cost consequences (Table 9) where high-anger individuals ( $M_s = 2.31$  and  $2.17$ , respectively) experienced more severe consequences than low-anger students ( $M_s = 1.76$  and  $1.55$ , respectively). For the second incident, although no gender or interaction effects were found, significant anger effects (Table 9) were found on self-esteem and overall cost ratings where high-anger participants ( $M_s = 1.45$  and  $2.33$ , respectively) experienced more severe consequences than low-anger individuals ( $M_s = 1.08$  and  $1.41$ , respectively).

As hypothesized, in situations involving high levels of anger, high-anger individuals experienced greater consequences in terms of physical damage to self, others, and property, relationship damage, lowered self-esteem, and overall costs. Examination of findings, however, showed that the differences between groups generally occurred because greater numbers of high-anger participants experi-

Table 8  
Proportions of High- and Low-Anger Participants Experiencing Consequences in Study 5

Consequence	Group		Difference in proportions test ( <i>z</i> )
	Low anger	High anger	
Most anger-involved incident in last year			
Physical-self	.17	.45	6.22*
Physical-other	.04	.20	4.95*
Physical-objects	.08	.26	4.85*
Relationships	.60	.80	4.55*
Work-school	.25	.35	2.20
Self-esteem	.49	.58	1.96
Overall cost	.55	.79	4.80*
Second most anger-involved incident in last year			
Physical-self	.10	.17	2.33
Physical-other	.02	.08	2.84*
Physical-objects	.07	.21	2.75*
Relationships	.58	.75	3.71*
Work-school	.17	.23	1.42
Self-esteem	.27	.48	4.30*
Overall cost	.52	.73	4.20*

\*  $p < .05$  (alpha level has been adjusted for experimentwise error).

Table 9  
*Anger Consequences Dropping High- and Low-Anger Participants Not Reporting a Consequence in Study 5*

Consequence	Group								Univariate anger effect, <i>F</i>
	Low anger				High anger				
	Men		Women		Men		Women		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Most anger-involved incident in last year									
Physical-self	1.18	0.83	1.67	0.87	1.45	0.67	1.62	0.80	1.12
Physical-other	2.00	1.41	1.00	0.00	2.00	0.88	1.83	0.89	0.35
Physical-objects	2.00	1.00	1.00	0.00	2.06	0.90	1.75	0.89	1.18
Relationships	1.75	0.64	1.77	0.74	2.21	0.80	2.44	0.70	18.24*
Work-school	2.00	0.77	1.71	0.61	2.05	0.78	2.13	0.64	1.58
Self-esteem	1.31	0.48	1.25	0.44	1.43	0.50	1.42	0.50	2.25
Overall cost	1.43	0.66	1.63	0.83	2.22	1.06	2.11	1.02	14.45*
Second most anger-involved incident in last year									
Physical-self	1.40	0.55	2.60	0.55	2.00	1.00	1.57	0.79	0.44
Physical-other	0.00	0.00	2.00	1.41	1.67	1.03	2.00	0.00	0.00
Physical-objects	2.00	0.84	2.50	0.71	2.45	0.69	1.44	0.53	1.60
Relationships	1.90	0.72	1.78	0.71	2.12	0.81	2.08	0.85	3.24
Work-school	2.00	0.71	1.92	0.79	2.22	0.67	2.38	0.65	2.02
Self-esteem	1.00	0.00	1.12	0.33	1.48	0.51	1.44	0.51	13.56*
Overall cost	1.42	0.61	1.41	0.71	2.49	1.12	2.17	0.90	30.17*

\*  $p < .05$  (alpha level has been adjusted for experimentwise error).

enced a consequence than low-anger participants. For example, for physical damage to self, others, and objects, high-anger students were from two to five times more likely to report a consequence than low-anger students, but for those who reported a consequence, the severity of these consequences was not significantly different. Only for relationship damage in one incident, self-esteem in the other, and overall costs in both situations were higher proportions of high-anger participants found to experience more severe consequences. Thus, this study supported the prediction that high-anger individuals suffer greater anger-related consequences, but with few exceptions, differences occurred because high-anger individuals were more likely to suffer a particular consequence, not because the consequence was more severe.

There were no significant gender interactions in this study, suggesting that when the most severe anger-related incidents are considered, men and women are equally likely to suffer similar consequences. When day-to-day consequences were considered in Study 4, there were gender interactions with high-anger men being more likely to experience adverse consequences, particularly those involving physical assault on others and objects. It appears that on a day-to-day basis, high-anger men are more likely to engage in behaviors that create these kinds of consequences, but that when the most severe situations occur, high-anger women "catch up" with high-anger men and are equally likely to suffer these kinds of consequences.

Frequent, less severe anger consequences and infrequent, more severe consequences should be studied separately as they may contribute differentially to various aspects of functioning. For example, frequent, day to day conse-

quences may have greater relevance to the quality of the individual's life and to incremental disease processes, such that high-anger individuals generally, and in some cases high-anger men specifically, may be more affected by these day-to-day consequences. On the other hand, less frequent, more severe consequences may have greater impact on vocational and legal aspects of the individual's world, and high-anger men and women may suffer equally from in these more severe outcomes.

### Study 6

Studies 1-5 provided data on convergent validity for the construct of trait anger, showing that high trait anger individuals experience more frequent and intense anger, express their anger less constructively, and experience more frequent and, in some cases, more severe consequences from their anger. Construct validity, however, would be strengthened by evidence of discriminant validity. If, as the theory suggests, trait anger is an individual difference variable predictive of the frequency and intensity of state anger, then not only should trait anger correlate positively with the frequency of state anger (convergent validity), but also this correlation should be stronger than the correlation of trait anger with other frequent negative emotions and behaviors (discriminant validity). That is, trait anger should predict the frequency of state anger and should predict it with greater power than it predicts the frequency of other nonangry emotions and behaviors. Study 6 evaluated the discrimination hypothesis by correlating trait anger with the number of times the individual had been angry, anxious, depressed, and intoxicated in the last month.

### Method

At the end of the first class, 880 students (536 women and 344 men) in five introductory psychology classes completed a single-page questionnaire and placed it in a box as they exited. The questionnaire consisted of (a) the TAS; (b) ratings of the number of times (0 to 5 or more) the student had been angry, anxious, depressed, and drunk in the last month; and (c) places for age and gender, and name and phone number if interested in research on anger.

### Results and Discussion

In all analyses the category of 5 or more was treated as a 5. A one-way (Gender) MANOVA across measures revealed a significant multivariate gender effect,  $F(5, 874) = 14.48, p < .001$ . Significant univariate gender effects were found on four variables, with men reporting higher trait anger and intoxication and lower anxiety and depression ( $M_s = 21.19, 2.33, 3.73, \text{ and } 2.03$ , respectively) than women ( $M_s = 20.25, 1.67, 3.96, \text{ and } 2.56$ , respectively),  $F_s(1, 878) = 6.85, 24.19, 6.39, \text{ and } 22.50$ , respectively,  $p_s < .05$ . Eta square values, however, revealed that the large sample size had allowed small effect sizes to be significant, as gender effects actually accounted for less than 1% of the variance of the TAS and anxiety frequency and less than 3% of variance in times depressed and drunk. Even though gender differences on these variables were small, separate correlation matrices for men and women (Table 10) were run in order to assess possible gender differences in relationships among variables. Tests for differences in dependent correlations showed that the correlation of the TAS with anger frequency was significantly stronger than the correlation of the TAS with anxiety, depression, or intoxication frequencies for both men,  $t_s(341) = 6.54, 4.93, \text{ and } 6.80$ , respectively, and for women,  $t_s(533) = 6.64, 5.13, \text{ and } 6.87$ , respectively,  $p_s < .001$ . The correlation of the TAS with frequency of anger accounted for 31% of variance for men and 23% for women, whereas the correlation of the TAS with other variables only accounted for 1% to 8% of variance. Tests for differences in strengths of independent correlations showed that men and women did not differ in the strengths of relationships among variables. In summary, the two primary predictions of state-trait theory were supported. Specifically, trait anger was positively related to

frequency of state anger (elicitation hypothesis) and was a better predictor of the frequency of state anger than it was of the frequencies of other common emotions such as anxiety and depression and behaviors such as becoming intoxicated (discrimination hypothesis).

### Study 7

Study 7 provided evidence of both convergent and discriminant validity relative to the frequency of anger. Trait anger, however, should predict not only the frequency of state anger and anger-related behaviors but also the intensity of such conditions. Additionally, trait anger should be more strongly correlated with the intensity of anger-related conditions than with the intensity of other common emotions such as anxiety and depression, or psychological states such as psychoticism and paranoid ideation. Study 7 extended Study 6 by correlating trait anger with the intensity of anger-hostility in the last week as measured by the Symptom Checklist-90-Revised (SCL-90-R; Derogatis, 1983) and by comparing the strength of these correlations with those between trait anger and other SCL-90-R symptom intensities.

### Method

#### Participants

Participants were 178 volunteer students (64 men and 114 women; 8 of the original 186 opted not to participate) from an upper division abnormal psychology class ( $Mdn$  age = 21). For participation, students earned 6 points (in a system of more than 400) toward a final grade.

#### Instruments

Trait anger was measured by the TAS, and intensity of the following characteristics were measured by scales from the SCL-90-R: (a) anger-hostility by the 6-item Hostility scale reflecting thoughts, feelings, and actions relative to anger (e.g., temper outbursts, frequent arguments, and urge to harm); (b) somatization tendencies by the 12-item Somatization scale reflecting distress arising from perception of bodily dysfunction (e.g., headaches and dizziness); (c) obsessive-compulsiveness by the 10-item Obsessive-Compulsive scale reflecting irresistible thoughts (e.g.,

Table 10  
Correlations Among Trait Anger and Last Month's Frequency of Anger, Anxiety, Depression, and Intoxication for Men and Women in Study 6

Measure	2		3		4		5	
	M	W	M	W	M	W	M	W
1. Trait Anger Scale	.56	.48	.23	.17	.29	.25	.18	.08
2. Angry	—	—	.38	.24	.41	.39	.22	.14
3. Anxious			—	—	.25	.29	.18	.07
4. Depressed					—	—	.17	.10
5. Drunk							—	—

Note. Except for the Trait Anger Scale, measures refer to the frequency of moods or behaviors in the last month. Correlations greater than .09 are significant at  $p < .01$ . M = men; W = women.

unpleasant thoughts that will not leave one's mind) and compulsive behaviors (e.g., checking and indecisiveness); (d) self-consciousness and interpersonal anxiety by the 9-item Interpersonal Sensitivity scale reflecting interpersonal uneasiness and anxiety (e.g., easily hurt feelings, feeling shy with the opposite sex, and feeling inferior); (e) depression by the 13-item Depression scale assessing a broad range of dimensions reflecting depression (e.g., feeling blue and hopeless about the future); (f) general anxiety by the 10-item Anxiety scale tapping anxiety not related to specific situations (e.g., periods of panic, nervousness, and suddenly scared for no reason); (g) phobic anxiety by the 7-item Phobic Anxiety scale reflecting persistent fear of and desires to avoid specific situations (e.g., open spaces, crowds, and specific things, places, or activities); (h) paranoid thinking and behavior by the 6-item Paranoid Ideation scale representing paranoid thinking and behavior (e.g., feeling others cannot be trusted and feelings of being watched or talked about by others); and (i) psychotic or thought disordered tendencies by the 10-item Psychoticism scale reflecting symptoms ranging from marked loneliness (e.g., feeling lonely even when with others) to delusions (e.g., thought control) and hallucinations (e.g., hearing voices). SCL-90-R items are rated on a 5-point (0 = *not at all*, 1 = *a little bit*, 2 = *moderately*, 3 = *quite a bit*, 4 = *extremely*) scale of intensity for each item over the past 7 days. The SCL-90-R yields an intensity measure for each scale (i.e., the sum of the intensity ratings within that scale) and a Total Intensity index (i.e., the sum of all the symptom intensities). Alpha reliabilities for SCL-90-R scales range from .77 to .90, and 1-week test-retest reliabilities from .78 to .90 (Derogatis, 1983). Substantial validity evidence is summarized in Derogatis (1983).

### Procedure

In the fifth week of class, interested students picked up the TAS and SCL-90-R, which were completed at home and returned over the next three class periods. TAS and SCL-90-R data were anonymous, except for age and gender of student, as name and student number for extra credit were turned in separately.

### Results and Discussion

Because tests for differences in independent correlations revealed no gender differences among correlations, data were collapsed across gender (Table 11). Trait anger correlated significantly with intensity of angry, hostile feelings, and hostile behaviors in the past week, accounting for 30% of the variance. Correlations of trait anger with other symptom intensities were significant, but smaller, accounting for 3% to 17% of the variance and for 18% of the variance of Total Intensity. A series of tests for differences between dependent correlations (Table 11), which partially correct for the dependence among SCL-90-R scales, revealed that the correlation of the TAS with anger-hostility intensity and frequency was significantly stronger than the correlation of the TAS with all other respective symptom intensities. Although trait anger correlated with nearly all psychological SCL-90-R states, the correlations were higher with state anger-hostility intensity than with the intensities of other emotional and psychological states as well as the index of general symptom intensity, again providing support for state-trait anger theory and evidence of both con-

Table 11  
*Correlations of Trait Anger Scale (TAS) With SCL-90-R Symptom Intensity in Study 7*

Symptom	<i>r</i>	<i>t</i> (175) <sup>a</sup>
Hostility	.55	—
Somatization	.17	5.94*
Obsessive-compulsive	.38	3.60*
Interpersonal sensitivity	.40	3.04*
Depression	.30	4.26*
Anxiety	.32	4.14*
Phobic anxiety	.29	4.41*
Paranoid ideation	.41	2.99*
Psychoticism	.30	5.26*
Total symptom intensity	.42	3.16*

Note. Correlations greater than .14 are significant at  $p < .05$ .

<sup>a</sup> Test for difference in strengths of dependent correlations comparing the strength of the TAS and Hostility intensity correlation with the correlation of the TAS and the Symptom Checklist-90-Revised (SCL-90-R) symptom intensity.

\*  $p < .05$  (alpha level has been adjusted for experimentwise error).

vergent and discriminant validity for the TAS as a measure of trait anger.

### Study 8

Study 8 extended the logic of Studies 6 and 7 to anger expression. The discrimination hypothesis also suggests that trait anger should correlate with ways of expressing anger and that correlations with anger expression should be greater than the correlation of anger expression with other general emotions such as anxiety and depression. In earlier studies (e.g., Spielberger, 1988; Spielberger et al., 1985), trait anger was found to correlate positively with anger suppression (AX-I) and with outward negative expression (AX-O) and negatively with a controlled anger expression style (AX-C). Also, AX-I was unrelated to AX-O and AX-C, which were inversely related to each other. Moreover, trait anger was more strongly related to AX-O and AX-C than was trait anxiety, but trait anxiety was more strongly related to AX-I than was trait anger (Deffenbacher, 1992). The present study furthers understanding of these relationships by simultaneously assessing trait anger, anger expression styles, trait anxiety, and depression. Inclusion of trait anxiety and depression allowed for a more sensitive exploration of state-trait theory in regard to anger expression, as theory logically extends to predict that correlations between trait anger and anger expression styles will be stronger than those between trait anxiety and anger expression and between depression and anger expression.

### Method

#### Participants

Participants were 233 introductory psychology students (107 men and 126 women) who received one research credit.

## Instruments

Trait anger, anger expression styles, trait anxiety, and depression were assessed by the TAS, AX, TAI, and the Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979), respectively (see Study 1 for descriptions of the TAS and TAI). The AX (Spielberger, 1988) includes 8-item measures of anger suppression or anger held in (AX-I), outward negative expression of anger (AX-O), and calm, controlled anger expression (AX-C). AX scales have adequate alpha reliability and evidence of discriminant and convergent validity, which is reflected in different patterns of correlations with emotional, physiological, and other variables (Deffenbacher, 1992; Spielberger, 1988). The BDI is a 21-item, self-report measure of severity of depression over the past week; symptoms are rated on scales of 0–3 resulting in scores ranging from 0 to 63, with higher scores reflective of greater depression. The BDI has alpha reliability of .86 (Beck & Steer, 1984) and is one of the most widely validated measures of depression.

## Procedure

At a table that described various experiments available, introductory psychology students read a description of a questionnaire-type study and signed up to participate. Groups of approximately 60 were assessed in a large university classroom. Following informed consent procedures, students completed, in order, the TAI, BDI, TAS, and AX. The measures of anxiety and depression were completed prior to measures of anger so that responses to these measures would not be contaminated by any participant hypotheses about the nature of the study involving the relationship of anger to these variables. When questionnaires were complete, participants were debriefed and given experimental credits.

## Results and Discussion

Because no multivariate gender effects were found in a one-way (Gender) MANOVA, and because tests for differences between independent correlations revealed no gender differences in correlation matrices, data were collapsed across gender (Table 12). Before exploring the primary hypotheses, intercorrelations of measures were assessed. As found in prior research (Deffenbacher, 1992; Spielberger, 1988), AX-I did not correlate with either AX-O or AX-C, which correlated negatively with each other. Also, anger, anxiety, and depression correlated positively with each other, although tests for differences in dependent correlations showed that anxiety and depression were more highly related to each other than either anxiety or depression were

to anger,  $t_s(230) = 6.80$  and  $8.95$ , respectively,  $p_s < .001$ . With regard to the primary hypotheses, the TAS correlated significantly with all anger expression variables; however, so did the TAI and BDI. Tests for differences in dependent correlations were run to test the predictions that the TAS would form stronger relationships with anger expression styles than would the TAI or BDI. In these analyses, absolute values of correlations were employed in order to remove measurement artifacts that could lead to artificial differences. The TAS formed significantly stronger relationships with AX-O and AX-C than did the TAI,  $t_s(230) = 7.12$  and  $3.01$ , respectively,  $p_s < .001$ , or the BDI,  $t_s(230) = 6.18$  and  $4.39$ , respectively,  $p_s < .001$ . This pattern, however, did not hold for the AX-I. In fact, the TAI correlated significantly stronger with the AX-I than did the TAS,  $t(230) = -3.59$ ,  $p < .001$ , and there was no significant difference in the strengths of correlation of the TAS and BDI with AX-I,  $t_s(230) = 1.29$ . Moreover, the TAS was more strongly correlated with AX-O and AX-C than with AX-I,  $t_s(230) = 6.91$  and  $4.15$ , respectively,  $p_s < .001$ .

In summary, state-trait anger theory received further support, as trait anger was related to all anger expression styles (convergent validity), and the correlations of trait anger with two of the expression styles were stronger than their correlations with trait anxiety and depression (discriminant validity). However, the evidence for discriminant validity linking trait anger with anger suppression is weak, as anger suppression had more to do with anxiety than anger per se. The overall pattern of results suggests that trait anger, as assessed by the TAS, is characterized more by expression of anger in outward, negative, and less controlled ways and to a much lesser extent by anger suppression.

## Integrative Discussion

State-trait anger theory (Spielberger, 1988; Spielberger et al., 1983, 1988) proposes trait anger as a fundamental individual difference in the propensity to become angry. This leads to the two general predictions that high trait anger individuals tend to become angry more frequently and more intensely than low trait anger individuals (elicitation and intensity hypotheses) and to three corollary predictions that high-anger individuals express their anger in more maladaptive ways and experience more negative consequences from their anger (negative expression and consequence hypotheses) and that as a unique personal characteristic or personality factor, trait anger should predict anger phenomena more powerfully than other emotional and behavioral phenomena (discrimination hypothesis).

Findings from the current research supported all five of these hypotheses. High-anger individuals reported that a wider range of potential provocations angered them, as well as reporting more frequent anger on a weekly and monthly basis, all suggesting that more things were angering them. They reported more intense anger across a wide range of situations, in their most angering, ongoing situations, in day to day activities, in angry and hostile feelings and behaviors

Table 12  
Correlations Among Trait Anger, Trait Anxiety,  
Depression, and Anger Expression Styles in Study 8

Measure	2	3	4	5	6
1. Trait Anger Scale	.42	.33	.28	.70	-.58
2. Trait Anxiety Inventory	—	.75	.50	.34	-.41
3. Beck Depression Inventory		—	.37	.29	-.31
4. Anger Expression-In			—	.07	-.07
5. Anger Expression-Out				—	-.60
6. Anger Expression-Control					—

Note. Correlations greater than  $|\cdot17|$  are significant at  $p < .01$ .



over the last week, and in the level of reported anger-related physiological arousal. Moreover, anger intensity findings did not appear confounded by different types of provocations, but reflected higher intensity levels to similar provocations. High-anger individuals also reported more intense state anger in response to experimental provocations. Thus, the two primary predictions were supported as it was consistently shown that high-anger individuals were more frequently and intensely angered.

State-trait theory was also extended successfully to modes of expressing anger and to the outcomes or consequences of anger expression (negative expression and consequence hypotheses). High-anger persons experienced more dysfunctional coping when provoked, reported using both outwardly negative and inwardly suppressive expression styles, and reported more frequent and, in some cases, severe anger consequences.

Finally, the discrimination hypothesis received support from the patterns and strengths of correlations. Trait anger was more strongly associated with the frequency and intensity of anger and anger-related thoughts and behaviors than it was with general indexes of psychological distress, with other specific emotions such as anxiety and depression, with psychological states such as paranoid thinking, or with behavioral acts such as becoming intoxicated. Moreover, trait anger was highly related to expression of anger in an outwardly negative way and had a strong negative relationship to controlled styles of expression, whereas anxiety and depression showed much weaker relationships with these modes of anger expression. Although there was some evidence for general negative affectivity (Watson & Clark, 1984) because trait anger was correlated with other emotional, cognitive, and behavioral conditions, trait anger was significantly more strongly related to angry feelings, angry-hostile symptoms, and outward negative expression of anger than to other emotions, behaviors, symptoms, or anger suppression. An underlying construct of anger proneness thus appears more explanatory than the construct of general negative affectivity.

Overall, there was considerable convergent and discriminant validity for the concept of trait anger, and the TAS appears to be a good measure of this tendency. Data from several different measures and methodologies converged to support trait anger as a relatively unique emotional dimension of personality. In fact, across studies there were only two nonconfirmatory findings: (a) high- and low-anger participants did not differ on heart rate immediately after the experimental provocation in Studies 1 and 2, and (b) trait anxiety was a better predictor of anger suppression than trait anger. Perhaps, heart rate did not change because it takes greater provocation than the studies provided (i.e., that produced by naturalistic provocations and interpersonal challenges) to lead to reliable physiological differences, as suggested by Smith (1992) in his review of studies of hostility and physiological arousal. A portion of the explanation may also lie in the use of a single physiological response. Even though pulse-related responses were a frequently mentioned anger symptom (Table 5), they were listed by less than 20% of participants. Heart rate may not

be the most sensitive physiological anger response for everyone, and assessment of multiple response systems may be required to identify the individual's most responsive system and confirm the theoretically predicted physiological changes for high-anger participants, at least in situations not eliciting strong physiological arousal.

The fact that anger suppression was more strongly linked to trait anxiety than trait anger suggests that anger suppression might be better conceptualized in frameworks involving other emotional states and traits, especially those involving anxiety. Throughout these studies, direct and indirect evidence suggested that trait anger was related more to outward negative, less controlled expression styles. For example, although trait anger was correlated with anger-in, it formed larger correlations with anger-out and anger-control styles. Also, in response to experimental provocation, high-anger individuals reported more verbal and physical antagonism and lower constructive coping, none of which are reflective of suppression or inhibition of expression. More frequent and severe consequences experienced by high-anger individuals also suggest less controlled, more negative expression. Moreover, trait anger was more strongly correlated with the anger-hostility scale on the SCL-90-R, which includes hostile thoughts and action items, than with general or phobic anxiety scales more reflective of anxiety and inhibition. Thus, trait anger appears to be more strongly associated with less controlled, outwardly expressive styles than with anger suppression. Research in areas such as health psychology (e.g., Diamond, 1982) and depression (e.g., Biaggio & Goodwin, 1987; Riley, Treiber, & Woods, 1989), which have noted the importance of anger suppression and anxiety, should take note of the greater relationship of anger suppression to anxiety than to other anger variables and include both anger expression and anxiety measures so that results are not attributed to conceptually different processes when, in fact, they are empirically linked.

Gender did not appear to mediate anger relationships, as there were relatively few gender differences in the eight studies. Even where gender differences were found, they were small and did not tend to replicate. In general, results suggest that, within the limits of methodologies employed, men and women are angered by similar things and to similar degrees, express themselves in similar ways, and suffer similar consequences. This conclusion is not meant to imply that men and women do not differ, for they may. For example, there was suggestive evidence that high-anger men may somewhat more frequently suffer negative consequences resulting from physically assaultive behavior. However, even here, results were not consistent, for when the most serious anger incidents were sampled, women were as likely as men to suffer negative consequences. Thus, the studies in this article and other recent reviews (e.g., Sharkin, 1993) do not suggest that there are large gender differences consistent with sex role stereotypes of anger as a male emotion. One potential explanation for these findings is that gender role may be a better predictor of anger (Kopper, 1993; Kopper & Epperson, 1991) than gender per se. However, should this prove to be the case, the variance ac-

counted for may still be relatively small because gender and gender role are significantly correlated (Bem, 1981).

Findings from these studies have several implications for counseling practice and research. First, the TAS appears to have good clinical utility as a measure of general anger. When combined with a statement of personal problems with anger and a desire for help with those problems, the TAS discriminated a meaningful group of angry individuals. They report elevated anger on a large number of indexes and in considerable portions of their lives, and they handled their anger less well and suffered significant consequences because of their anger. Moreover, although the TAS correlated with other negative psychological conditions, there was good evidence that it was not seriously confounded by these issues and that it primarily assessed anger. Thus, the TAS may prove useful as a brief screening device for general anger and be used as an outcome measure for the individual case or treatment studies involving general anger reduction.

Second, high trait anger individuals experience both elevated angry emotions and difficulties in positive, prosocial expression of that anger. That is, they appear marked by both heightened emotionality and skill deficits in social problem-solving, assertion, and communication skills. Heightened emotionality might be targeted directly with relaxation interventions (e.g., Deffenbacher, Demm, & Brandon, 1986; Deffenbacher & Stark, 1992; Hazaleus & Deffenbacher, 1986) or cognitive interventions (e.g., Deffenbacher et al., 1988; Hazaleus & Deffenbacher, 1986; Moon & Eisler, 1983; Novaco, 1975) to reduce anger-engendering cognitions or a combination of cognitive and relaxation interventions (e.g., Deffenbacher, Story, Stark, Hogg, & Brandon, 1987; Deffenbacher et al., 1988, 1994; Deffenbacher & Stark, 1992; Novaco, 1975). Skill deficits in interpersonal communication and conflict resolution might be addressed by social problem-solving interventions (e.g., Moon & Eisler, 1983) or by social skills training (e.g., Deffenbacher et al., 1987, 1994; Moon & Eisler, 1983), which enhances the individual's capacity to generate and execute calm, problem-focused negotiation, assertion, and expression.

Third, even though there was a pattern of converging characteristics of high-trait anger individuals, there was also considerable variability in the situations that triggered their anger, the patterns of expression, and the consequences suffered. This suggests that when dealing with an individual client, the counselor and client should carefully map these dimensions to identify areas of greatest vulnerability and to make sure that therapeutic insights and interventions are applied successfully to these areas. That is, effective anger reduction interventions will still benefit from a careful assessment and focusing of intervention on the specific triggers and vulnerabilities of the individual. A related intervention issue is that of personal strengths. Even though deficits and difficulties were strongly suggested by the present research, high-anger individuals also reported controlled expression on some occasions. Control strategies and positive examples of dealing with anger should also be explored to identify personal strengths and assets that may

be adapted to other elements of the individual's anger problems.

Fourth, although anger appeared to stand alone as an identifiable set of concerns, it too was associated with other negative emotions and issues such as anxiety and depression. This suggests that these issues might benefit from attention, too. Therapeutic strategies developed for anger might be adapted to other issues, especially in the latter stages of therapy when anger issues have been addressed to a great extent. For example, relaxation interventions might be adapted to other arousal states such as anxiety, guilt, and shame, or cognitive interventions might be focused on cognitive themes and schema contributing to anxiety or depression. Social problem-solving and social skill training interventions could be adapted to issues of social skill deficits involved in interpersonal anxiety and depression.

Finally, the relative lack of gender differences suggests that men and women are similar enough that, if a group intervention is employed, men and women can be combined efficiently in a group. In fact, there may be some added benefits such as balanced discussion of anger in partnered or work relationships, the renorming of expectations of anger in the opposite sex, and the availability of both genders for role plays and other interventions.

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