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Personality and Individual Differences 42 (2007) 1105–1115
PERSONALITY AND INDIVIDUAL DIFFERENCES
www.elsevier.com/locate/paid

Personality traits predicting anger in self-, ambiguous-, and other caused unpleasant situations

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Received 26 June 2006; received in revised form 17 August 2006; accepted 12 September 2006
Available online 28 November 2006

Abstract

This study examined how the experience of anger is differentially related to self-esteem, trait anger, and empathy depending on who is responsible for the anger-eliciting event. Participants engaged in a directed imagery task in which they reported on their anger experience in response to six scenarios that depicted unpleasant situations in which oneself is responsible, in which responsibility is ambiguous, or in which someone else is responsible. The results demonstrated that a low self-esteem predisposed participants to experience anger only when oneself was responsible for the unpleasant event. Anger experience was related to trait anger in all studied situation types, but most strongly in situations that were ambiguous with respect to who is responsible for what has happened. Finally, empathy was found to be most strongly related to anger experience in unpleasant situations in which someone else is responsible. These findings demonstrate the importance of taking into account contextual information for predicting emotional experience on the basis of traits and illustrate how emotional experience is the result of the interaction between person and situation.
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Keywords: Anger; Personality; Self-esteem; Trait-anger; Empathy; Trait-relevance

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doi:10.1016/j.paid.2006.09.011

1. Introduction

A common critique on personality traits is their limited predictive power for concrete behaviour and responses (Mischel & Shoda, 1998). One reason that has been advanced for their limited predictive power is that they may only affect an individual's behavior and reactions in specific, trait-relevant situations (e.g., Kenrick & Funder, 1988), situations that draw on particular sensitivities or vulnerabilities associated with the trait. As a result, the predictive power of personality traits may be limited to or highest in such specific, trait-relevant situations. A key task for personality psychologists, then, is to identify those situations in which particular personality traits most strongly influence an individual's reaction to the event.

In the present study, we present an analysis of traits that predispose people to experience the emotion of anger in reaction to specific contexts or events. Anger is an emotion that is frequently experienced by most individuals and that can have major interpersonal, societal, and even health consequences (e.g., Spielberger et al., 1985). Identifying which traits predispose individuals to experience anger in which situations can provide useful information for prevention and intervention programs aimed at altering the disruptive impact of anger. In what follows, we will first discuss the concept of responsibility which we expect to play a crucial role in qualifying the experience of anger, followed by a discussion of personality traits—self-esteem, trait anger, and empathy—which we expect to be differentially related to anger in events characterized by specific instances of responsibility.

2. Responsibility

One of the crucial factors in qualifying the anger response is that of blame or responsibility for an unpleasant event (e.g., Kuppens, Van Mechelen, Smits, & De Boeck, 2003). An assignment of blame is assumed to lie at the core of the experience of anger, directing the mobilized energy that accompanies it towards the source of frustration (e.g., Frijda, 1986). Although anger is prototypically regarded as resulting from someone else's wrongdoing, people can also experience anger when oneself is responsible for a frustrating event (e.g., Ellsworth & Tong, in press; Mikulincer, 1988). Furthermore, situations can be ambiguous with respect to who is responsible for what has happened. Such circumstances are considered to be highly diagnostic for individual differences in angry and aggressive responding (e.g., Orobio de Castro, Veerman, Koops, Bosch, & Monshouwer, 2002).

The dispositional processes that are implicated in producing higher or lower levels of anger in these different types of circumstances can be assumed to be of a different nature. Depending on whether oneself or someone else lies at the cause of an unpleasant event, or the cause is ambiguous, different personal sensitivities and habitual traits may act to predispose an individual to experience anger or not or in a more or less intense way. In particular, in cases of anger towards oneself, personality aspects or sensitivities related to the self may prove to be especially relevant for predicting anger. In this respect, we will consider self-esteem, a central facet of personality that concerns the self. Likewise, in cases of anger towards others, interpersonal personality traits may be particularly relevant. In this respect, we will examine the role of empathy. Finally, in situations that are ambiguous with respect to specific response-eliciting features, corresponding trait-levels

are often assumed to be highly predictive. Therefore, we will examine the role of trait-anger in this respect. We will now discuss our expectations about how and when these three traits are related to anger.

3. The role of self-esteem when oneself is responsible

In general, in terms of mere level of self-esteem, it is assumed that low levels of self-esteem predispose towards anger,[1] although the found relations have been inconsistent and weak (e.g., Baumeister et al., 1996; Esposito, Kobak, & Little, 2005). A possible reason for this may be that low self-esteem is related to anger only in particular situations. More specifically, a low self-esteem may act to heighten the impact of situations of personal failure (i.e., situations in which oneself is responsible for something that goes wrong) and hereby lower the threshold to experience frustration and anger in such cases. A relatively high self-esteem, in contrast, can serve to shield off the self-threatening effects of failure, attenuating its emotional impact (Dutton & Brown, 1997). It has indeed been found that low self-esteem individuals react more emotionally to instances of failure compared to high self-esteem individuals (e.g., Dutton & Brown, 1997). Moreover, low self-esteem individuals display a higher adrenocortical stress response in reaction to failure (Pruessner, Hellhammer, & Kirschbaum, 1999), which in turn has been found to be positively related to aggression-related activity in the brain (Kruk, Halasz, Meelis, & Haller, 2004).

4. The role of trait anger when responsibility is ambiguous

Trait anger refers to a personality characteristic that predisposes an individual to experience anger more frequently and more intensely (e.g., Deffenbacher, 1992). Thus, individuals scoring high on trait anger should in general respond with more intense anger to an event compared to individuals scoring low on trait anger. Yet, as situations that are ambiguous with respect to who is responsible are considered to be highly diagnostic for individual differences in anger (e.g., Orobio de Castro et al., 2002), we expect that individual differences in trait anger should be most strongly related to anger experience in ambiguous situations.

5. The role of empathy when someone else is responsible

Unpleasant situations for which someone else is to blame are the prototypical events in which anger is experienced (e.g., Russell & Fehr, 1994). Although most individuals can be expected to experience some level of anger in such circumstances, we hypothesize that some will experience more intense anger than others, depending on their level of empathy. Individuals that are highly empathic tend to take the perspective of the other person and place oneself into the mind of the

[1] An alternative view holds that high but unstable (or narcissist) self-views promote anger and violence (Baumeister, Smart, & Boden, 1996). Yet, according to this view, a high self-esteem only does not necessarily predispose to anger and aggression.

other. In cases when someone has purposefully treated you in a bad way, empathic efforts can lead to an increased awareness of the hostile intent of the wrongdoer, hereby increasing the level of anger. Although it may seem paradoxical to relate higher levels of empathy to higher levels of a hostile emotion such as anger, we assert that empathy can be relevant for anger in a number of different ways, from appeasing (Miller & Eisenberg, 1988) to invigorating its experience (Vanneste, Van Mechelen, & Kuppens, in preparation) depending on the person one empathises with and in what way.

An empirical study was set up to examine how the above mentioned personality traits are differentially related to the experience of anger depending on whether the responsibility for an unpleasant event lies with oneself, is ambiguous, or with someone else. Data were collected by means of a directed imagery task in which participants' anger experiences were assessed in reaction to the different types of situations, and we examined how these reactions were related to the personality characteristics of interest.

6. Method

6.1. Participants

Participants were 345 students attending the Katholieke Universiteit Leuven. They participated in return for course credits. Of the participants, 270 were female, 75 were male. Their mean age was 18,4 years.

6.2. Materials

6.2.1. Imagery task

Situation descriptions. To obtain situation descriptions that depict the different types of responsibility, situation descriptions were taken from a study by Kuppens and Van Mechelen (in press). In this study, other-blame scores (based on a three-item scale) were collected for 24 descriptions of unpleasant events and were subjected to a principal component analysis. The analysis yielded two components (accounting for 48% of the variance), one referring to self-responsibility and one referring to other-responsibility, and enables one to select situations that reflect self-responsibility, other-responsibility, and ambiguous responsibility: For the present study, two situation descriptions were selected that loaded highly (>.77) on the component referring to self-responsibility ("*Despite having promised to friends, you miss a popular party because you fall asleep at home*" and "*You did not study hard enough for an exam, and you fail the exam*"), two situation descriptions were selected that loaded highly (>.76) on the component referring to other-responsibility ("*A friend lets you down on a date, and calls you the following day to let you know that he/she did not feel like meeting with you and went out with other people instead*" and "*You hear that a friend is spreading gossip about you*"), and two situations with substantial loadings (>.45) on both the components, reflecting ambiguous situations ("*On holiday with friends, you arrange that each in turn has to carry the heavy tent gear. On one day, the tent gear is missing*" and "*You're out for a drink after a hard day's work, and you have to wait 30 min before you are served*"). The situations were presented in a random order.

Anger experience. In response to each situation description, the participants were asked to rate how applicable the statement "I feel angry" was to their response by means of a seven-point scale (ranging from 1 = not at all to 7 = very strong).

6.3. Trait questionnaires

Self-esteem. Self-esteem was assessed using a Dutch version of the Rosenberg self-esteem scale (Rosenberg, 1989) as a measure of global level of self-esteem. The scale consists of five positively and five negatively formulated items that reflect an individual's appraisal of oneself which have to be rated on a four-point scale (ranging from 1 = strongly disagree to 4 = strongly agree). The internal consistency of this scale (Cronbach alpha) equalled .90.

Trait Anger. Trait anger was measured with the Dutch adaptation of the Spielberger Trait Anger Scale (Van der Ploeg, Defares, & Spielberger, 1982). The scale consists of ten items which have to be rated on a four-point scale (from 1 = almost never to 4 = almost always). Cronbach alpha equalled .86.

Empathy. A Dutch version of the Empathic Concern subscale from the Interpersonal Reactivity Index developed by Davis (1983) was used to measure empathy. This scale is intended to measure other-oriented feelings of sympathy and concern for unfortunate others, and consists of seven items which have to be rated on a five-point scale (ranging from 1 = totally not agree to 5 = totally agree). Cronbach alpha equalled .79.

7. Procedure

At the start of the directed imagery task, participants were given a booklet containing descriptions of the six unpleasant situations. For each situation, they were asked to carefully read the description, imagine as vividly as possible how they would feel, what they would do, and what they would think in such a situation, and subsequently rate their anger response. At the end of this task, they were asked to fill out the personality questionnaires. All materials were in Dutch.

8. Results

As expected, participants on average felt most intense anger in the unpleasant situations in which someone else is responsible ($M = 4.54$, $SD = 1.29$) as compared to unpleasant situations in which oneself is responsible ($M = 2.47$, $SD = 1.61$) or which are ambiguous with respect to responsibility ($M = 2.56$, $SD = 1.52$), the difference being significant ($F = 429.42$, $p < .001$).

Multilevel (mixed model) regression analyses (Snijders & Bosker, 1999) were performed to examine how the personality traits are differentially related to anger in the different types of situations. The (fully crossed) data were structured such that situations are nested within persons. Three dummy variables were constructed with values referring to the situation type of each person-situation entry: One with a value of 1 if oneself is responsible in the corresponding situation and 0 otherwise ($SELF_s$), one with a value of 1 if the corresponding situation type is ambiguous and 0 otherwise (AMB_s), and one with a value of 1 if someone else is responsible in the corre-

sponding situation and 0 otherwise ($OTHER_s$). Multilevel analyses were performed for each trait separately. In these analyses, anger was predicted on the basis of two situation dummy variables (denoting the situation types in which the trait is *not* expected to have the strongest effect on anger), the participants' scores on the particular trait, and two interaction terms that were computed as the product of the included situation dummy variables and the trait scores. An example of such a model can be written as follows:

$$\begin{aligned} ANGER_{sp} = {} & \beta_0 + \beta_{0p} + \beta_1 AMB_s + \beta_2 OTHER_s + \beta_3 TRAIT_p + \beta_4 AMB_s \times TRAIT_p \\ & + \beta_5 OTHER_s \times TRAIT_p + \varepsilon_{sp} \end{aligned}$$

The results of such an analysis reveal how the trait is differentially related to anger in the three different types of situations. In particular, in the example model, for situations in which oneself is accountable ($AMB_s = 0$ and $OTHER_s = 0$ in the model expression), it can be derived that the regression slope denoting the relationship between the trait variable $TRAIT_p$ and the anger response in that particular situation equals β_3. For situations that are ambiguous ($AMB_s = 1$ and $OTHER_s = 0$), the regression slope for $TRAIT_p$ equals $\beta_3 + \beta_4$. Finally, for situations in which someone else is accountable ($AMB_s = 0$ and $OTHER_s = 1$), the regression slope for $TRAIT_p$ equals $\beta_3 + \beta_5$. Finally, as can be derived from the model equation, we allowed for a random intercept (whereas slopes were fixed to be equal across persons for the present purposes).

First, regarding the relationships with self-esteem, Table 1 presents the results of an analysis in which anger experience is predicted on the basis of the situation dummy variables denoting ambiguous situations (AMB_s) and other responsible situations ($OTHER_s$), self-esteem, and the product terms of the situation variables and self-esteem. In this model, the regression slope of the variable self-esteem directly reflects how strong self-esteem is related to anger in situations in which oneself is responsible. The slopes corresponding to the two product variables reflect how the relationships between self-esteem and trait anger in the other two situation types differ from this baseline slope. For convenience, the table also contains the computed slopes for self-

Table 1
Multilevel analyses predicting anger on the basis of self-esteem in self-responsible, ambiguous, and other-responsible situations

	β	T-ratio	p
Basic model ($R^2 = .30$)			
Intercept	3.60	10.36	<.001
AMB_s	−0.83	−2.31	.021
$OTHER_s$	0.66	1.78	.074
Self-esteem$_p$	−0.37	−3.31	.001
$AMB_s \times$ Self-esteem$_p$	0.31	2.63	.009
$OTHER_s \times$ Self-esteem$_p$	0.47	3.82	<.001
Computed coefficients[a]			
Self-esteem when oneself is responsible	−0.37	−3.31	.001
Self-esteem in ambiguous situation	−0.07	−0.55	.580
Self-esteem when someone else is accountable	0.09	0.93	.354

[a] Corresponding T-ratio and p-values were obtained by estimating a model in which the corresponding situation type serves as the baseline (i.e., a model that includes dummy variables for the two non-corresponding situations types).

esteem in all three types of situations, calculated on the basis of the principles outlined above. The results show that in ambiguous and other-responsible situations, self-esteem did not predict the experience of anger. In contrast, in situations in which oneself is responsible, self-esteem was found to be negatively related to anger, and this slope was found to differ significantly from those in the other two types of situations (as can be inferred from the tests concerning the slopes of the product terms).

Second, regarding relationships with trait anger, Table 2 presents the results of an analysis in which anger experience is predicted on the basis of the situation variables denoting self responsible situations ($SELF_s$) and other-responsible situations ($OTHER_s$), trait anger, and the product terms of these situation variables and trait anger. Analoguous to the above, the slope of trait anger in the basic model reflects the effect of trait anger in ambiguous situations, whereas the slopes of the product terms represent how much the slopes in the other two situation types deviate from this baseline slope. The results show that trait anger is positively related to the experience of anger in all three examined types of situations. Yet, this relationship is clearly most outspoken in ambiguous situations. Moreover, the relationship between trait anger and anger experience is (marginally) significantly larger in this type of situations as compared to in the other two types of situations.

Third, regarding relationships with empathy, Table 3 presents the results of an analysis in which anger experience is predicted on the basis of the situation variables denoting self responsible situations ($SELF_s$) and ambiguous situations (AMB_s), empathy, and the product terms of these situation variables with empathy. They show that empathy is not related to the experience of anger in ambiguous situations. In contrast, empathy is positively related to anger in situations in which oneself is responsible and in situations in which someone else is responsible for what has happened, with the strongest relationship being observed in situations in which someone else is responsible (the difference not being significant, however).

Table 2
Multilevel analyses predicting anger on the basis of trait anger in self-responsible, ambiguous, and other-responsible situations

	β	T-ratio	p
Basic model ($R^2 = .33$)			
Intercept	0.98	3.70	<.001
$SELF_s$	0.44	1.53	.125
$OTHER_s$	2.64	9.85	<.001
Trait $anger_p$	0.81	6.08	<.001
$SELF_s \times$ Trait $anger_p$	−0.28	−1.89	.059
$OTHER_s \times$ Trait $anger_p$	−0.34	−2.54	.011
Computed coefficients[a]			
Trait anger when oneself is responsible	0.54	4.16	<.001
Trait anger in ambiguous situation	0.81	6.08	<.001
Trait anger when someone else is accountable	0.47	4.33	<.001

[a] Corresponding T-ratio and p-values were obtained by estimating a model in which the corresponding situation type serves as the baseline (i.e., a model that includes dummy variables for the two non-corresponding situations types).

Table 3
Multilevel analyses predicting anger on the basis of empathy in self-responsible, ambiguous, and other-responsible situations

	β	T-ratio	p
Basic model ($R^2 = .29$)			
Intercept	3.23	8.46	<.001
$SELF_s$	−1.71	−3.34	.001
AMB_s	−0.71	−1.46	.143
$Empathy_p$	0.34	3.54	.001
$SELF_s \times Empathy_p$	−0.10	−0.75	.454
$AMB_s \times Empathy_p$	−0.33	−2.63	.009
Computed coefficients[a]			
Empathy when oneself is responsible	0.24	1.99	.047
Empathy in ambiguous situation	0.01	0.11	.917
Empathy when someone else is accountable	0.34	3.54	.001

[a] Corresponding T-ratio and p-values were obtained by estimating a model in which the corresponding situation type serves as the baseline (i.e., a model that includes dummy variables for the two non-corresponding situations types).

Finally, an analysis was performed including all three traits and corresponding product terms simultaneously to take into account covariation between the trait measures. The results were highly similar as those reported for the separate analyses (as an exception, self-esteem was marginally significantly and positively related to anger when someone else was accountable, $p = .06$).[2]

9. Discussion

In general, the findings illustrate that the predictive power of dispositional traits may be moderated by situational factors. The experience of anger was differentially related to dispositional characteristics as a function of who is to blame in the situation.

First, the results showed that a low self-esteem is related to higher levels of anger, but only when oneself is responsible for an unpleasant event. This finding suggests that a low self-esteem facilitates the experience of anger in cases of personal failure. Possibly, individuals with a lower self-esteem may be endowed with less effective defence mechanisms to cope with experiences of personal failure (see, e.g., DiPaula & Campbell, 2002). In turn, a person with a higher self-esteem may be sufficiently shielded to not overly react to such instances, having sufficient self-confidence to guard oneself against the possible painful implications of one's own failure. This finding also touches upon the concept of self-anger and its underlying mechanisms. Anger is prototypically seen as an interpersonal emotion, arising as a result of interpersonal conflict in which someone else is blamed for a wrongful act. Yet, recent research highlights the existence of self-anger

[2] An alternative way to analyse the data would be to specify a multilevel model with no intercept and with all three situation dummy variables as predictors at level 1, and with the trait variable(s) as covariates at level 2 predicting the corresponding random slopes. This model is equivalent to the reported model, but allows for person-specific error terms per situation type. The results of such analyses proved to be highly equivalent to those already reported and supported identical conclusions.

(Ellsworth & Tong, in press)—being angry at oneself. This type of anger defeats traditional assumptions of the appraisals underlying anger (see, e.g., Kuppens et al., 2003), and may be characterized by different underlying processes or may arise from different sensitivities. Although the findings indicated that anger levels are indeed higher when someone else is to blame, our results also reveal that individuals differ in the extent to which they can experience self-anger, and provides clues to the psychological mechanisms underlying these differences.

Second, the results showed that trait anger plays an important role in anger experience across different types of situations, hereby lending support to assumptions of state-trait emotion theories. Moreover, as hypothesized, the findings showed that ambiguous situations are most diagnostic for revealing such dispositional differences, as trait anger was most strongly related with anger experience in this particular type of situations. As such, researchers interested in revealing a person's general propensity towards anger may well benefit from studying situations in which it is not clear who lies at the basis of an unpleasant event (see also, Orobio de Castro et al., 2002).

Third, empathy was positively related to levels of anger in situations in which someone else is responsible. Especially given the content of the used empathy measure in terms of feelings of sympathy and concerns for unfortunate others, this finding may seem perhaps counterintuitive. Yet, first, as was argued in the introduction, empathic efforts may lead to a stronger realisation of the blameworthiness of the other's actions, hereby increasing anger levels. Second, the sympathy and concern that individuals scoring high on the used empathy measure may display towards unfortunate others, may reflect a deeply rooted sense of fairness and belief in a just world. This, in turn, could invigorate feelings of unfairness and anger in cases when someone else performs a clearly harmful act towards them. Thus, these results suggest that the positive interpersonal connotations that are usually associated with empathy (e.g. Miller & Eisenberg, 1988) should be complemented with the notion that empathy can also increase feelings of anger, at least when someone else is clearly accountable for something unpleasant. It should be mentioned that also in other studies, empathy has been found to increase levels of anger. For instance, Vanneste et al. (in preparation) showed that when a third person is the victim of someone else's wrongful actions, higher levels of empathy are also positively related to experienced anger. Although the underlying mechanisms may differ, these findings equally illustrate the potential anger-increasing effects of empathy.

Finally, empathy was also, albeit to a lesser degree, found to increase anger when oneself is responsible. At this point, it is not clear how the other-oriented nature of empathy can lead to an increase of self-anger. However, when inspecting the nature of the situations used to depict self-responsible unpleasant events (i.e., despite having promised to friends, you miss a party because you fell asleep, you fail on an exam because you did not study enough), it is plausible that heightened concerns over the possible negative evaluations of one's actions by others (family, friends) may be related to increased feelings of self-anger in such cases.

9.1. Limitations and conclusions

A limitation of this study lies in the reliance on self-reported reactions to hypothetical scenarios instead of to real or ongoing events. A major reason for adopting this methodology was that it allowed for assessing the impact of standardized events on the experience of anger and individual differences therein in a within-subjects design. Moreover, this methodology has proven to produce

valid information regarding emotion (Robinson & Clore, 2001). Second, in hindsight, the used scenarios consisted of both achievement and affiliation situations that possibly could differentially moderate the examined trait-anger relationships. Yet, the design of the present study does not allow to systematically test this proposition. Finally, anger was measured with a single item, which limits the demand imposed on participants, but may affect reliability.

The importance of our findings can be situated in two domains. From a theoretical point of view, our results highlight the importance of contextual information for increasing the predictive power of personality traits. Moreover, our findings help to reveal differential mechanisms behind anger in different contexts. From a practical point of view, our results provide direct and clear indications about which types of individuals are more prone to experience anger in what types of situations. Given the disruptive impact of anger and its behavioral expressions, it is important to be able to base intervention strategies on knowledge about the intricate processes that underlie its occurrence and intensity and how they are shaped by situation and person characteristics. For instance, as the present findings show that particularly low self-esteem individuals are more prone to experience anger in situations of personal failure, interventions could be directed at increasing self-esteem and to learn to prevent and cope with experiences of personal failure.

Acknowledgement

The research reported in this paper was supported by KULeuven Research Council Grant GOA/05/04. The first author is a postdoctoral research fellow of the Flemish Fund for Scientific Research.

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