

The role of defense mechanisms in the modulation of anger experience and expression: Gender differences and influence on self-report measures

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Abstract

Based on the background that defense mechanisms might contaminate personality evaluation measures, the present study was performed with the aim of verifying the influence of defense mechanisms on a self-evaluation instrument for anger.

A total of 100 healthy subjects (44 males and 56 females) completed the STAXI – State-Trait Anger Expression Inventory and the DMI – Defense Mechanisms Inventory.

Data were analyzed through *t* test for independent samples, correlation analysis (Pearson's correlation coefficients), and stepwise regression models. The means for anger experience and expression resulted all in the normal range and no gender differences were observed; no gender differences were found in the use of defense mechanisms. The interference of defense mechanisms on anger self-evaluation was more prominent in males. In both sexes, TAO predicts anger experience and expression.

The “contamination” of self-report data by defense mechanisms can lead to oversimplified, unrealistic models of human behavior. The assessment of defense mechanisms associated to self-report instruments may conduce to a more realistic evaluation of anger.

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1. Introduction

In the past decades, little attention has been paid to the emotion of anger by clinicians and researchers, although aggressive and violent behaviors have been widely investigated from neurobiological features to forensic implications. This neglect is probably due to a number of factors:

- Conceptual ambiguity due to the frequent overlapping between the constructs of anger and aggression.
- Higher socio-relational impact of aggression if compared to anger.
- Lack of request for therapeutic intervention by angry patients who do not recognize the emotional pathology but, rather, usually justify it as related to external causes.
- Underestimation, from a clinical point of view, of the emotion of anger when it is not associated with aggressive displays, despite its negative repercussions on health.

Considering the wide range of theoretical paradigms produced by various authors in the last years, it seems quite difficult to interpret anger in an univocal way. According to Spielberger, Jacobs, Russell, and Crane (1983) “Anger usually refers to an emotional state that consists of feelings that vary in intensity, from mild irritation or annoyance to intense fury and rage. . . While anger and hostility refer to feelings and attitudes, the concept of aggression generally implies destructive or punitive behavior directed toward other persons or objects” (p. 16). Anger can be considered as a complex emotional experience which involves both physiological and cognitive components. The physiological component is mediated by the arousal of the CNS, which, in dangerous situations, prepares the organism to a “fight/flight” response through the release of adrenocortical hormones, an increase in cardiac activity, blood pressure and muscle tension; the psycho-physiological arousal associated to anger can well explain the strict relation among anger, coronary disease (Siegman, 1994) and hypertension (Harburg, Gleiberman, Russell, & Cooper, 1991; Spielberger, Crane, Kearnes, Pellegrin, & Rickman, 1991). Cognitive components refer to judgements, ideas, attitudes and appraisals which play an important role in response to particular events and situations. Evidence shows that, even in childhood, anger-prone subjects are characterized by distortions and deficits in social information processing (Crick & Dodge, 1994; Tiedens, 2001). Like anxiety and fear, anger is associated with negative emotional valence and physiological arousal but, unlike fear, it mobilizes the individual to react and attack rather than avoid a potentially harmful stimulus and, in this framework, it can be viewed as an adaptive components of survival processes for humans and animals (Lang, Bradley, & Cuthbert, 1998). On a socio-relational level, anger can produce interpersonal conflicts and occupational maladjustment (Deffenbacher, Oetting, Lynch, & Morris, 1996) since it may compromise cognitive functioning and judgement, produce conflicts, and not be instrumental to problem solving (Bodenhausen, 1993); moreover, it can constitute a dimensional, *trans-nosographical* component of many psychiatric disorders (Fava, Rappe, West, & Herzog, 1995).

The observation that anger often induces a remarkable subjective discomfort, disturbing cognitive functioning and adjustment, has led researchers to focus on anger regulation and control. Taking into account that emotions may be regulated in almost limitless ways, Gross (1998, 1999)

has suggested two possible regulatory strategies, operating at two different points in the emotion generative process. The first, *antecedent-focused emotion regulation*, is evoked very early in the emotion generative process, whereas the second, *response-focused regulation* occurs after emotion response tendencies have been triggered. According to this hypothesis, emotion regulation that occurs early does not require continual self-regulatory efforts, while response-focused regulation requires continual self-monitoring and ongoing self-correcting action, that is, a constant outlay of cognitive resources. The regulatory strategies above described may involve the use of defense mechanisms. Originally defined by Freud (1936) as mental functions which protects the individual from excessive anxiety, defense mechanisms exert their protective function through modifications, distortions or the removal of disturbing thoughts, feelings and perceptions.

According to the Diagnostic and Statistical Manual of Mental Disorder – DSM IV (American Psychiatric Association, 1994), defense mechanisms “are automatic psychological processes that protect the individual against anxiety and from the awareness of internal or external dangers or stressors. Individuals are often unaware of these processes as they operate”. The influence of defense mechanisms in exploring personality has been highlighted by Norem (1998) who has suggested that defense mechanisms may contaminate personality evaluation measures, creating problems for a realistic interpretation of the findings obtained by the self-report instruments used in research. The author wonders “Are those who report low negative affect really low in negative affect, or are they repressing negative affect? How do we distinguish one kind of low score from another?” (p. 899).

It has been suggested that defenses may be better related to psychopathological dimensions and mainly to negative emotions, rather than to defined psychiatric syndromes. As proposed by Plutchik (1995) in his psychoevolutionary theory, defenses are derivatives of emotions and, more specifically, he related anxiety to repression, anger to displacement and sadness/depression to compensation.

To the best of our knowledge, studies aiming to evaluate possible relationships between anger and defense mechanisms like unconscious processes (not coping strategies) are still sparse (Zoccali et al., 2006a; Zoccali et al., 2006b).

Based on the assumption that self-reports do not assess emotions, but rather the individual ability to experience them and describe them, and that this ability may be diminished by defense mechanisms, the present study has been conducted on a healthy sample with the aim of verifying the influence of defense mechanisms on a self-evaluation instrument for anger, considering possible gender differences.

2. Materials and methods

2.1. Participants and procedures

One hundred and twenty-three volunteers from the staff of the University of Messina, Italy, participated in the study. Participants responded to advertisements placed on notice boards and the university website. Psychologists and psychiatrists were excluded. The study was introduced as an investigation on personality and emotions and participants were asked to answer self-report questionnaires anonymously. Twenty subjects did not complete the questionnaires

and they were excluded from the study; three subjects did not comply with the assessment sections. Useful data were collected from 100 subjects, 56 females (mean age 27.39, SD 4.2) and 44 males (mean age 29.06, SD 4.1) The social-cultural level was medium-high.

2.2. Measures

State-Trait Anger Expression Inventory – STAXI (Spielberger, 1988, Italian version by Comunian, 1994), as cited in Spielberger (1994).

The STAXI is a self-evaluation questionnaire with 44 items which measure anger experience and expression. The State Anger scale (S–A) measures the intensity of angry feelings at a particular time. The Trait Anger scale (T–A) measures individual differences in the disposition to experience anger. Trait Anger scale is further divided in two subscales – Angry Temperament (T–A/T: measuring a general tendency to experience and express anger without specific provocation) and Angry Reaction (T–A/R: the disposition to express anger when provoked by specific events like personal criticism, rejection or neglect).

The Anger Expression Scales are Anger-Out (AX/Out; which measures the expression of anger toward other people or objects in the environment), Anger-In (AX/In; which measures the extent to which angry feelings are held in or suppressed), Anger Control (AX/Con; which assesses the frequency with which individuals effectively control or reduce the expression of anger). Last scale, Anger Expression (AX/EX), derived from the previous three scales, which provides a general index of the expression of anger, independently from its direction (inward, outward).

The factor structure of the STAXI, as reported by Spielberger (1988), has received strong empirical support in many studies (Fuqua et al., 1991; Spielberger, Reheiser, & Sydeman, 1995). Internal consistency coefficients for the scales and the sub-scales range from .70 to .90 indicating a strong relationship among the items of the scales. The STAXI shows good test–retest reliability, internal consistency, content, concurrent and discriminative validity, and has a factor structure which is relatively uniform across different populations (Deffenbacher, 1992; Forgays, Forgays, & Spielberger, 1997).

Defense Mechanisms Inventory – DMI (Gleser & Ihilevich, 1969, Italian version by Fioriti, Fiurara, & Gentili, 1994), as cited in Ihilevich and Gleser (1994). The DMI is a paper-and-pencil forced choice test that measures the relative strength of five defensive clusters. The test consists of 10 brief stories designed to reflect conflicts in areas of authority, independence, femininity/masculinity, competition, and unexpected events. Each vignette is followed by four questions concerning the respondent's overt behavioral reaction (What would your actual reaction be?), fantasy or impulsive response (What would you impulsively – in fantasy – want to do?), thoughts (What thought might occur to you?), and feelings (How would you feel and why?). Five forced choices are given for each question, each corresponding to one of the defense groups being measured. The subject has to select the most representative answer for each question, and the one least representative of his/her way of reacting. Scores for each defense cluster are summed over the 10 stories, with a maximum possible score of 80. The five defense mechanism clusters are:

1. Turning Against Object (TAO), which deals with conflicts through attacking a real or presumed external frustrating object; displacement and identification with the aggressor are included.

2. Projection (PRO), which consists in the attribution of negative characteristics or intent to an external object to justify the expression of hostility toward the other.
3. Principalization (PRN), which deals with conflicts through the splitting of thought content from affect which is repressed; rationalization, intellectualization and isolation are included.
4. Turning Against Self (TAS), involving those defense mechanisms that handle conflicts by directing aggressive thoughts or behaviors toward oneself, such as masochism and introjection.
5. Reversal (REV), which includes defenses that act to minimize the severity of perceived threats by responding neutrally or positively toward a frustrating object; reaction formation, denial and repression are included.

The DMI has been used in broad clinical (Greenberg & Fisher, 1984; Ihilevich & Gleser, 1986) and non clinical samples (Cramer, 1991). The full-version of the instrument shows good test–retest reliability, internal consistency, content, concurrent and discriminative validity, and it has a factor structure which is relatively uniform across different populations (Cramer, 1988).

Internal consistency coefficients for 1000 late adolescent and adult participants ranged from .61 to .80 for the five indices. Test–retest reliability coefficients ranged from .62 to .82 for samples of college students (Grimm, Brannon, & Juni, 1997).

The Italian adaptation and validation of DMI has been conducted on 196 normal subjects (93 males aged from 17 and 50 years, mean age $29.57 + 7.5$ years; 103 females aged from 18 and 50 years, mean age $27.6 + 7.5$ years). Test–retest reliability analysis, conducted on 40 subjects (21 males aged from 17 and 48 years and 19 females aged from 18 and 50 years), did not show significant differences on the five scales (Gleser & Ihilevich, 1969, Fioriti et al., 1994) as cited in Ihilevich and Gleser (1994).

Intratest correlation studies carried out by Ihilevich and Gleser (1994) have identified two opposing defensive polarities: Turning against the Object/Projection (TAO–PRO) and Principalization/Reversal (PRN–REV). The defenses included in the first polarity have been defined as externalizing defenses, whereas the ones forming the latter as internalizing defenses, depending on the method of managing conflicts. Therefore, the DMI may distinguish defenses based primarily on displacement from defenses based on repression; although this clustering may sacrifice discrimination among individual defenses, and certainly obscures important differences (Vickers & Hervig, 1981), it is particularly relevant in the management of anger experience and expression.

2.3. Data treatment

Data obtained from the two psychometric instruments were statistically analyzed. All analyses were carried out using the SPSS package. A normality test for all variables was conducted and parametric tests for quantitative variables were applied:

- Comparisons of group means by means of *t* test for independent samples.
- Correlation analysis between the STAXI and DMI variables using Pearson’s correlation coefficients, tested for verification.
- A stepwise regression model, where trait anger (T–A) was taken as dependent variable and all defense mechanism scores were entered into the equation. Next, a stepwise regression model where anger expression (AX/EX) scores were taken as dependent variable.

Taking into account that multiple correlations increase the risk of Type 1 errors, a Bonferroni correction was applied, and a significance value of $p < .003$ was chosen.

3. Results

The means and the standard deviations for the STAXI scales and the DMI clusters are given in Table 1. The mean scores for anger experience and expression were all in the normal range. To test the hypothesis of gender differences on the anger scales and on the defense clusters, t tests were performed. None of the t tests reached significance ($p < .003$), indicating that the females and males in our sample do not differ significantly on their anger experience and expression. In regard to the defense mechanisms variables, no gender differences were found at the selected level of significance ($p < .003$); nevertheless, the tendencies to a prevalent use of TAO for males and, on the other hand, of TAS and REV for females were found. Correlations between DMI and STAXI variables in male and female samples, respectively, are presented in Tables 2 and 3. The similar pattern of correlations between TAO and anger experience and expression was observed for both sexes; TAO was positively correlated with Trait anger, Anger outward, and Anger expression, and inversely related to Anger control, whereas, only in males, TAO was also positively correlated with Trait anger reaction. In men, PRO positively correlated with Trait anger reaction, whereas PRN was inversely correlated with Trait Anger, and Trait anger reaction, and, finally, REV, was inversely correlated with trait anger and anger expression. In women, only REV was inversely correlated with Anger expression. Overall, the results for the males (Table 2) are robust and in line with the hypothesized relationship between defenses and anger.

Table 1

Mean values (and standard deviations) and results of t tests for independent samples at STAXI and DMI scales for females ($n = 56$) and males ($n = 44$) of the whole sample

	Males	Females	t value (df = 98)	p value
	Mean (SD)	Mean (SD)		
S-A	52.77 (6.07)	55.85 (9.67)	1.84	.068
T-A	51.40 (9.45)	56.14 (11.29)	2.23	.028
T-A/T	42.34 (8.98)	44.00 (9.57)	.84	.379
T-A/R	52.70 (8.95)	54.05 (9.94)	.704	.483
AX/In	57.79 (10.57)	64.28 (12.66)	2.73	.007
AX/Out	52.70 (12.55)	52.82 (11.87)	.04	.962
AX/Con	45.95 (10.17)	42.98 (9.75)	-1.48	.141
AX/EX	58.84 (13.14)	63.30 (14.46)	1.59	.114
TAO	52.00 (8.93)	45.80 (12.23)	-2.82	.006
PRO	51.40 (8.19)	50.01 (7.54)	-.88	.380
PRN	50.56 (10.28)	48.05 (9.23)	-1.28	.201
TAS	44.11 (8.63)	49.80 (12.12)	2.63	.010
REV	49.90 (11.67)	56.39 (11.29)	2.80	.006

S-A, state anger; T-A, trait anger; T-A/T, trait anger-temperament; T-A/R, trait anger-reaction; AX/In, anger inward; AX/Out, anger outward; AX/Con, anger control; AX/EX, anger expression.

TAO, turning against object; PRO, projection; PRN, principalization; TAS, turning against self; REV, reversal.

Table 2

Correlations (Pearson's r) between DMI and STAXI scales in males ($n = 44$)

	S-A	T-A	T-A/T	T-A/R	AX/In	AX/Out	AX/Con	AX/EX
TAO	.335	.626*	.070	.595*	-.203	.500*	-.466*	.481*
PRO	.135	.419	.030	.454*	.057	.258	-.380	.371
PRN	-.191	-.581*	-.133	-.447*	-.001	-.363	.370	-.429
TAS	.048	-.132	.170	-.235	.301	-.137	.227	-.059
REV	-.357	-.467*	-.113	-.415	-.082	-.395	.288	-.441*

* $p \leq .003$.

Table 3

Correlations (Pearson's r) between DMI and STAXI scales in females ($n = 56$)

	S-A	T-A	T-A/T	T-A/R	AX/In	AX/Out	AX/Con	AX/EX
TAO	.225	.431*	.257	.184	.189	.424*	-.476*	.491*
PRO	.006	.022	-.100	-.051	-.057	.078	-.040	.140
PRN	-.153	-.298	-.245	-.122	-.162	-.325	.327	-.368
TAS	.192	-.020	-.014	.081	.257	-.010	.016	.125
REV	-.191	-.299	-.111	-.171	-.204	-.221	.326	-.419*

* $p \leq .003$.

A stepwise regression model was set up to see which defenses predicted the level of anger experience in both groups. TAO, PRO, PRN, TAS and REV were entered into the equation, and T-A scores were taken as dependent variables. In men, TAO ($R^2 = .391$; $\beta = .446$; $t = 3.441$; $p = .001$) and PRN ($R^2 = .486$; $\beta = -.357$; $t = -2.752$; $p = .009$) scores predicted the level of anger experience. In women, only TAO scores predicted the level of anger experience ($R^2 = .186$; $\beta = .431$; $t = 3.508$; $p = .001$).

We then set up another stepwise regression model where AX/EX scores were taken as dependent variables. In both groups, only TAO scores predicted the level of anger expression (males: $R^2 = .231$; $\beta = .481$; $t = 3.555$; $p = .001$; females: $R^2 = .241$; $\beta = .491$; $t = 4.146$; $p < .0001$).

4. Discussion

The results appear to support the general hypothesis that defense mechanisms may affect the experience and the expression of anger. A first observation is the absence of gender differences on either anger experience or anger expression in our sample. Previous studies related to this topic have reported contradictory data: the tendency by women to suppress anger (Haynes, Levine, Scotch, Feinleib, & Kannel, 1978), has not been further confirmed (Tavris, 1989). When the effect of gender role identification on measures of trait anger, rather than sex, has been examined (Kopper & Epperson, 1996; Milovchevich, Howells, Drew, & Day, 2001), individuals classified as adopting a masculine gender role were found to be more anger-prone as they reported higher levels of trait-anger, outward anger expression, and lower anger control, while feminine gender role

was associated with lower levels of trait anger, expressed anger inwardly and higher levels of anger control.

With regard to gender differences in defense mechanisms, although not significant by the standards here employed, the trends toward a prevalent use of TAO in men and TAS and REV in women is consistent with data from other studies (Cramer, 1991; Eriksen, Olff, & Ursin, 1997). One possible explanation is that gender differences in the use of externalizing and internalizing defense mechanisms might be related to social mechanisms, as the stereotypical socialization pattern of the females includes an inhibition of overt hostility and aggression, while those kinds of behavior are tolerated, and even encouraged, in men (Cramer, 2002).

Externalizing defense mechanisms, based on the mechanism of displacement, tend to shift the source of conflict outside the individual. As suggested by Juni (1997), "displacement is a basic defense mechanism where the ego substitutes a new object instead of a threatening object. The hallmark of displacement is the nondistortion of the original impulse with the defensive strategy originated solely at object substitution" (p. 152). With reference to projection, Juni (1997) pointed out that "the projector can thus righteously maintain this feeling of anger, by defensively blaming the origin of the anger unto the other person" (p. 154). Assuming that externalizing defense mechanisms are not associated with the repression of angry feelings, but, conversely, with its displacement on an external source, it is reasonable to suggest that TAO and PRO do not modify angry feelings, since the emotion is less disturbing if it is experienced as triggered by environmental stimuli or it is displaced on objects which are different from the original source of conflict. Conversely, internalizing defense mechanisms protect the individual diminishing the awareness of disturbing emotions. As previously evidenced in relation to aggression, TAO/PRO polarity should increase the expression of aggressive behavior, whereas PRN/REV polarity should inhibit it (Wilson, 1982). Our data seem to confirm that the previously described defensive polarities may contribute to modulate the experience and the expression of anger, which can be strongly predicted by TAO and, weakly, by PRN.

One interesting possibility is that both the STAXI and DMI are associated with a third factor, namely orientation toward social desirability. Social desirability, which can be defined as the desire to maintain favorable impressions and to comply with social standards and norms (Kuppens, 2005), constitutes a promising candidate for moderating the relationships between self-report instruments in at least two different ways (Gravdal & Sandal, 2006). As suggested by Lobel, Kastian, and Winch (1987), those who score high on social desirability tend to use less externalizing defense mechanisms, as they are highly motivated towards approvals. On the other hand, within a gender-related framework, it can be hypothesized that men who care about social desirability do not actually use more outward-directed forms of defense. Rather, they say that they use externalizing defenses, and are more anger-prone, because they perceive these traits as a masculine ideal, and conversely for women.

Another intriguing hypothesis is that trait anger, rather than being influenced by defense mechanisms, may affect the development of defense mechanisms; anger-prone individuals might be more likely to develop externalizing defenses, while anger-resistant people internalizing defense mechanisms.

Besides these hypotheses, our results address a methodological question which has been undervalued: how reliable are self-evaluation measures? To what extent may the self-knowledge of a subject compiling the self-evaluation test be modified by defense mechanisms? With regard to

the first question, Furlong and Smith (1994) have highlighted the general disadvantage of the self-reports: filtered and subjective rater perceptions, social desirability, and “halo effect” (no discrimination among behaviors) are individual factors which interfere with the validity of self-evaluation instruments. Mayne and Ambrose (1999) have focused on defense mechanisms, mainly repression, as well as on alexithymia as potentially invalidating conditions. Since defense mechanisms are basically related to negative affects, to disturbing emotions and to self-knowledge, it can be hypothesized that they are involved in virtually every measure that implicates affects, emotions, self and other related personality constructs. On the other hand, empirical studies of defense mechanisms involve the use of self-report instruments and, as explained by Mehlman and Slane (1994), a reconsideration of both the use of self-report measures of defense mechanisms and the adequacy of the definitions given to various defense mechanisms is needed.

One limitation of this study is that the measures used to assess anger and defense mechanisms may be vulnerable to the effect of other factors. Another weakness is that the study sample was relatively small and, consequently, the results obtained need to be confirmed on a larger population. Our findings, therefore, suggest the desirability of associating the assessment of defense mechanisms to self-report instruments, with the aim of obtaining a more realistic and complete evaluation of anger.

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