

## When the “threat system” is switched on: The impact of anger and shame on paranoia

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**Abstract:** This paper aims to understand the nature of the anger response and explore the relationship between anger, shame, depression and paranoia beliefs. The sample consists of 208 individuals from the general population, with a mean age of 32.67 years. Results show that external shame and depressive symptoms have a significant and independent contribution to current feelings of anger (state-anger) and to the expression of anger towards people and objects (anger-out). The key finding in this study is that trait-anger temperament is the best global predictor of paranoid beliefs, followed by external shame and depressive symptoms. Overall, these results may provide new perspectives on the nature of anger, highlighting the interrelationship between threat-defensive emotions and their impact on paranoid beliefs.

**Keywords:** Anger; depression; paranoia; external shame.

*Quando el “sistema de alarma” está encendido: Impacto del enfado y la vergüenza en la paranoia*

**Resumen:** Este trabajo tiene el propósito de comprender la naturaleza de la respuesta de ira y explorar la relación entre cólera, vergüenza, depresión y creencias de paranoia. La muestra se compuso de 208 individuos de la población general, con una media de edad de 32.67 años. Los resultados muestran que la vergüenza externa y los síntomas depresivos tienen una contribución significativa e independiente a los sentimientos de ira (estado de ira) así como a la expresión de ésta hacia las personas y los objetos (externalización de la ira). La principal conclusión de este estudio es que el rasgo temperamental de ira es el mejor predictor global de las creencias paranoides, seguido de la vergüenza y de los síntomas de depresión. En general, estos resultados pueden proporcionar nuevas perspectivas sobre la naturaleza de la ira, poniendo en relieve la relación entre las emociones de amenaza-defensiva y su impacto en las creencias paranoides.

**Palabras clave:** Ira; depresión; paranoia; vergüenza externa.

### Introduction

Evolutionary social challenges have given rise to a variety of social motivations to create certain types of social roles. These social roles include ways of relating, such as care eliciting/seeking, care-giving, co-operating, mate selecting and mating and competing (Gilbert, 2000a). Such innate strategies or social mentalities guide their hosts via motives and emotions. Indeed, emotions

affect the way that we think and behave in a variety of personal and social contexts (Morris & Keltner, 2000). Although the basic emotions are innate responses, learning may change their expression through emotional inhibition, social context and reinforcement (Greenberg, Rice, & Elliott, 1993). As a result, learning and knowledge about our emotions depend on the social interactions and the feedback obtained via the interactions between our and others' minds (Greenberg et al., 1993; LeDoux, 1998). Thus, when we perceive others as hostile, harmful, and threatening, this creates negative feelings (e.g., contempt, anger, shame) and makes the world unsafe (Gilbert, 1989, 1993). So, when environments are threatening, humans rapidly have access to an evolved

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menu or suite of strategic responses (ways of attending, feeling, behaving and thinking) to aid adaptive responding. The most appropriate/efficient response in face of a threat of a predator is to become anxious and run away; if someone takes something out or frustrates us or treats us unfairly, the best thing to do will be to feel anger and express it with aggressive attitudes and threat (Gilbert, 2000a). Thus, in face of threat and/or ambiguous situations, the brain firstly process threat signals and then displays defensive outputs, which the basic rule is “better safe than sorry” (Gilbert, 2000a,b; LeDoux, 1998; Panksepp, 1998). The function of the threat-defensive system is to detect threats and respond automatically to them with defensive behaviours (such as fight, flight, and freeze) and emotions (for example, anger, shame, anxiety, disgust) (Depue & Morrone-Strupinsky, 2005).

Regarding the experience and expression of anger, this defensive emotion has been explored from different theoretical perspectives. According to social rank theory, humans are highly sensitive and responsive to rank related social threat signals (Sloman & Gilbert, 2000). Our concerns that one has traits that others disapprove or do not value (e.g. not good enough, inadequate), or lack valued abilities (e.g. physical attractiveness) give rise to perceptions of being of low rank in worth and self-identity. This experience of inferiority, inadequacy and worthlessness is known as shame, which can recruit emotions of anxiety, disgust and anger (Gilbert, 1998; Tangney & Dearing, 2002). Shame has two dimensions: internal and external (Gilbert, 1998). External shame is characterized by evaluations focused on those aspects we believe others would reject or attack if they became public. At a cognitive level, external shame refers to how one thinks others see the self (Allan & Gilbert, 2002; Allan, Gilbert, & Goss, 1994). Internal shame involves negative views and feelings of our own attributes or behaviours (Cook, 1996). Individuals who act based on a threat social rank mentality seek and strive to be valued by others, fight for status and social position, compete for resources, are hypersensitive to evaluation and social comparison and have a high sensitivity to shame (Gilbert, 1998, 2003).

Furthermore, in these intra-group conflicts, individuals who have a low and inferior social rank position report more submissive behaviours, social anxiety, paranoid thoughts and angry thoughts and feelings (Allan & Gilbert, 2002; Freeman et al., 2005; Gilbert, Boxall, Cheung, & Irons, 2005). Paranoia can be conceptualized as a defensive strategy that helps the detection of threats to the self from potential hostile and harmful others (De la Rubia, 2014; Freeman, 2007; Freeman et al., 2004, 2005; Freeman, Garety, Kuipers, & Bebbington, 2002;

Gilbert et al., 2005). Thus, paranoid beliefs may be adaptive in some contexts, for example, low, unstable or vulnerable self-esteem and attachment difficulties (Freeman, 2007). However, when individuals see themselves as inferior, devalued, and see others as hostile, threatening and harmful, it may trigger a malevolent other-focused explanatory style in order to preserve the feeling of safety of the self and the world. Paranoid individuals tend to believe that others conspire, discriminate, threaten or intentionally victimize them, and consequently have poor or absent interpersonal relationships (Matos, Pinto-Gouveia, & Gilbert, 2013; Pinto-Gouveia, Matos, Castilho, & Xavier, 2012). These individuals appear to live in a hostile, rather cold world, where affiliative emotions and behaviours are blocked (Mills, Gilbert, Bellew, McEwan, & Gale, 2007).

Another way to deal with feelings of being criticized and devalued by others is externalization and counter-attack, which are associated to feelings of anger and revenge fantasies. Therefore, the evaluation or judgment that others treat the self as inferior to what the individual prefers, is associated with anger and aggressive behaviours (Elison, Garofalo, & Velotti, 2014; Velotti, Elison, & Garofalo, 2014). This suggests that anger is a defensive emotion, highly associated with an external attributional style (blame others) for being criticize or put down (Gilbert & Miles, 2000; Velotti et al., 2014). The feeling of anger includes several experiences and organizes our mind in specific ways, including physical sensations (e.g., tension, heartrate increase, pressure to act), cognitive (e.g., attention/thinking focused on threat) and behaviour or motivations (e.g., aggressive display) (Forgays, Forgays, & Spielberger, 1997). There is large evidence that both anger and shame can become pathological. Specifically, anger arousal (trait anger and suppression of anger) are associated with depression in a clinical sample (Riley, Treiber, Woods, 1989). Shame feelings have been linked to several clinical conditions such as depression (Gilbert, 1998, 2000b, 2003; Gilbert, Gilbert, & Irons, 2004), paranoia (Matos et al., 2013), social anxiety (Gilbert, 2000b; Gilbert & Miles, 2000) and personality disorders (Velotti et al., 2014). Some studies have shown that paranoid beliefs occur in a continuum of severity from non-clinical to clinical populations (Lopes, 2011) and they are almost as common as depressive and anxiety symptomatology (Freeman, 2007; Freeman et al., 2005). Nevertheless, the relationship between anger, shame and paranoia remains less investigated.

Thus, this study aims to explore the relationship between anger, shame, depression and paranoia beliefs. Specifically, we analysed the contribution of external

shame and depression to the prediction of the components of anger. Secondly, we investigated the contribution of anger, external shame and depression to the prediction of paranoia.

## Method

### Participants

Participants in this study were 208 subjects from the general population. Of these, 52.9% were males ( $n = 110$ ) and 47.1% females ( $n = 98$ ). Mean age was 32.67 ( $SD = 11.15$ ) and the participants had an average of 13.60 ( $SD = 3.97$ ) years of education. Concerning marital status, 53.8% of the participants were single ( $n = 112$ ), 38.5% were married or in a relationship ( $n = 80$ ), 6.7% were divorced ( $n = 14$ ) and 1% were widows ( $n = 2$ ). The majority of the sample had middle class professions (65.9%,  $n = 137$ ). *T* tests revealed significant differences in age and years of education in this sample. Males were older than females ( $M = 34.73$ ,  $SD = 12.04$  vs.  $M = 30.37$ ,  $SD = 9.59$ , respectively). Additionally, females had more years of education than males ( $M = 14.32$ ,  $SD = 3.49$  vs.  $M = 12.95$ ,  $SD = 4.25$ , respectively).

### Procedures

A battery of self-report questionnaires was administered to the participants by the authors. The participants were the staff of several institutions, specifically private corporations. These institution's boards were contacted, the research aims were explained and an authorization was obtained so that their employees could participate in the study. Afterwards, the personnel was informed about the investigation goals and invited to voluntarily participate. Then, self-report questionnaires were filled out by the participants in the presence of a researcher. In line with ethical requirements, it was emphasized that participants' cooperation was voluntary and that their answers were confidential and only used for the purpose of the study.

### Measures

*Other As Shame Scale* (OAS; Allan, Gilbert & Goss, 1994; Portuguese version by Matos, Pinto-Gouveia, & Duarte, 2014). The scale consists of 18 items measuring external shame (global judgments of how people think others view them). For example, respondents indicate the frequency on a 5-point scale (0–4) of their feelings and experiences to items such as, 'I feel other people see me as not quite good enough' and 'I think that other

people look down on me'. Higher scores on this scale reveal higher external shame. In their study, Allan et al. (1994) found this scale to have a Cronbach's alpha of .92. In the current study the internal consistency was good ( $\alpha = .92$ ).

*State-Trait Anger Expression Inventory* (STAXI; Spielberger, 1988). The STAXI is a 44-item instrument that requires respondents to make self-ratings along a 4-point scale. Five scales from the STAXI were selected to be used in this study. These scales were described in the STAXI manual as follows: (i) State Anger – "The intensity of angry feelings at a particular time", (ii) Trait-Anger temperament and reaction – "General propensity to experience and express anger without specific provocation", (iii) Anger-In – "The frequency with which angry feelings are held in or suppressed", (iv) Anger-Out – "How often an individual expresses anger toward other people or objects", (v) Anger-Control – "The frequency with which individual attempts to control the expression of anger (Spielberg, 1998, p.1). Internal consistency reliabilities reported in the STAXI manual range from .73 to .93. In the present study the Cronbach's alphas were .85 for trait-anger subscale, .93 for state-anger subscale, .72 for anger-in subscale, .78 for anger-out subscale, and .89 for anger-control subscale.

*Depression, Anxiety and Stress Scales* (DASS-42; Lovinbond & Lovinbond, 1995; Portuguese version by Pais-Ribeiro, Honrado, & Leal, 2004) is a self-report measure of 42 items and designed to assess three dimensions of psychopathological symptoms: depression (14 items), anxiety (14 items) and stress (14 items). The items indicate negative emotional symptoms and the respondents are asked to rate each item on a 4-point scale (0–3). In the original version, Lovibond and Lovibond (1995) found the subscales to have high internal consistency (Cronbach alphas: .91 for depression subscale; .84 for anxiety subscale; and .90 for stress subscale). In this study, only the depression subscale of the *DASS-42* was used and the internal consistency was good ( $\alpha = .94$ ).

*General Paranoia Scale* (GPS) was developed by Fenigstein and Venable (1992) and translated and adapted into Portuguese by Lopes (2011). This 20-item self-report is the most widely used dimensional measure of paranoia (Freeman et al., 2005). The GPS was designed to measure paranoia in college students, particularly, the following characteristics: the belief that another person, or a powerful external influence, is commanding the individual's thoughts and behaviours (e.g., "Someone has been trying to influence my mind"); the belief of a conspiracy against oneself, i.e. others are

working together to conspire against the individual (e.g., “My parents and family find more fault in me than they should”); the belief of being spied on and talked negatively about oneself behind one’s back (e.g., “I sometimes feel as if I am being followed”); a general suspicion regarding others and a lack of trust on people (e.g., “It is safer to trust no one.”) and finally the presence of feelings of resentment (e.g., “I am sure I get a raw deal from life”). Each item is rated on a 5-point Likert scale (1-5). Scores can range from 20 to 100, with higher scores indicating greater paranoid ideation. Fenigstein and Venable (1992) found this scale to have good internal consistency across their four North-American samples ( $\alpha = .84$ ). In the current study the Cronbach’s alpha was .91.

### Data analysis

All analyses were conducted using PASW (Predictive Analytics Software), version 18 (SPSS Inc., Chicago, IL, USA) for PCs. Independent sample t tests were carried out to test for gender differences and two-tailed Pearson correlation coefficients were performed to explore the relationships between external shame, angry feelings (State Anger, Anger-In, Anger-Out, Anger-Control, Trait-Anger temperament), depression and paranoia (Cohen, Cohen, West, & Aiken, 2003). Hierarchical multiple regression models were used to analyse the relative contribution of external shame to the prediction of angry feelings. The relative contribution of external shame and angry feelings to the prediction of paranoid beliefs was also analysed (Cohen et al., 2003).

## Results

### Preliminary data Analyses

Data were screened for normality of distribution and outliers. Preliminary analyses revealed a largely and normally distributed sample (Skewness values  $< |3|$  and Kurtosis values  $< |10|$ ; Kline, 2005). Furthermore, a series of tests were conducted to examine the suitability of the current data for regression analyses. Analysis of residuals scatter plots showed that the residuals were normally distributed, had linearity and homoscedasticity. Also, the independence of the errors was analysed and validated through graphic analysis and Durbin-Watson value (values ranged between 1.709 and 1.968). Regarding multicollinearity or singularity amongst the variables, Variance Inflation Factor (VIF) values indicated the absence of  $\beta$  estimation problems ( $VIF < 5$ ). Overall, these results suggested that these data were adequate for regression analyses.

### Descriptives

The means and standard deviations for all variables are presented on Table 1. Gender differences were tested and no significant differences were found in any variable. Therefore, all statistical analyses were conducted within the total sample. Regarding demographic variables (i.e., age and years of education), correlation analysis were conducted between these variables and shame, angry feelings, depression and paranoia beliefs. No significant correlations were found, except for Trait-anger and years of education ( $r = -.25, p \leq .001$ ), paranoia beliefs and years of education ( $r = -.20, p \leq .001$ ) and Anger-control and age ( $r = .25, p \leq .001$ ). For this reason, we controlled the effect of this variables in the regression analysis.

Table 1. Means and standard deviations for all variables in study

Variables	Total (N = 208)	
	M	SD
External Shame (OAS)	19.94	10.98
Trait-Anger (STAXI)	20.53	5.56
State-Anger (STAXI)	13.25	5.47
Anger-In (STAXI)	16.82	4.13
Anger-Out (STAXI)	13.95	4.00
Anger-Control (STAXI)	20.66	5.81
Depression (DASS-42)	8.20	8.46
Paranoia (GPS)	45.56	11.66

Note: OAS = Other as Shamer Scale; STAXI = State-Trait Anger Expression Inventory; DASS-42 = Depression Anxiety and Stress Scales; GPS = General Paranoia Scale.

### Study I: Anger, shame and depression

*Correlation analysis.* The potential difficulties in multicollinearity were analysed and no high multicollinearity was found in the majority of variables, except for depression, and therefore, subsequent statistical analyses were conducted by controlling for their effect.

External shame was significantly and positively correlated with trait-anger temperament ( $r = .53, p < .001$ ), state anger ( $r = .45, p < .001$ ), anger-in ( $r = .25, p < .001$ ), and anger-out ( $r = .39, p < .001$ ). In contrast, external shame was negatively associated with anger-control ( $r = -.44, p < .001$ ). External shame had a high and significant correlation with depressive symptoms ( $r = .59, p < .001$ ). Angry feelings, in particular trait-anger temperament ( $r = .53, p < .001$ ), state anger ( $r = .46, p < .001$ ), anger-in ( $r = .23, p < .001$ ), and anger-out ( $r = .43,$

$p < .001$ ), were significantly and positively correlated with depression symptoms. Anger-control was negatively associated with depression symptoms ( $r = -.44, p < .001$ ).

*Regression analyses.* To better understand these results, the relative contribution of depressive symptoms and external shame to the prediction of different dimensions of the angry feelings was examined through hierarchical multiple regression analyses.

*Trait-anger temperament and reaction.* A hierarchical multiple regression analysis was performed, using age, years of education, depression symptoms (DASS-42) and external shame (measured by OAS) to predict

trait-anger temperament and reaction (subscale Trait-Anger measured by STAXI) (Table 2). In step one, we entered age, years of education and depression symptoms as predictors and a statistically significant model was produced,  $F_{(3,204)} = 36.27, p \leq .001$ . In step two, we included external shame as a predictor variable and the model was also significant and accounted for 41% of the trait-anger temperament variance. In this final model, external shame emerged as the best global predictor ( $\beta = .34, p \leq .001$ ), followed by depression ( $\beta = .28, p < .001$ ), years of education ( $\beta = -.27, p = .001$ ) and age ( $\beta = -.20, p = .001$ ), suggesting that these variables have an independent effect on trait-anger temperament variance (Table 2).

Table 2. Model summary and Beta values for hierarchical multiple regression analyses for trait-anger and anger-control (STAXI) as dependent variables (N = 208)

	Trait-anger				Anger-control			
	R	R <sup>2</sup>	F	β	R	R <sup>2</sup>	F	β
<b>Step 1</b>	.59	.35	36.27***		.51	.26	23.492***	
Age				-.210***				.274***
Years Education				-.261***				.114
Depression				.477***				-.408***
<b>Step 2</b>	.65	.42	26.038***		.55	.30	12.732***	
Age				-.195***				.262***
Years Education				-.270***				.120
Depression				.279***				-.256***
External shame				.337***				-.259***

Note. \*\*\* $p \leq .001$

*State-anger.* Similar procedures were conducted in order to explore the best predictors of state anger (measured by STAXI) (Table 3). In step one, we entered depressive symptoms as a predictor variable and it produced a statistically significant model,  $F_{(1,206)} = 54.85, p \leq .001$ , accounting for 25% of the variance in state anger. In step two, we included external shame as a predictor and the model was also significant and accounted for 25% of the state anger variance. In this final model, depression emerged as the best predictor of state anger ( $\beta = .30, p < .001$ ) followed by external shame ( $\beta = .27, p < .001$ ) (Table 3).

*Anger-out.* Similarly, a hierarchical multiple regression analysis was conducted, using depression and external shame (measured by OAS) to predict anger-out (measured by STAXI) (Table 3). In step one, we entered depressive symptoms as a predictor variable and it produced a statistically significant model,  $F_{(1,206)} = 45.89,$

$p \leq .001$ , accounting for 17.8% of the anger-out variance. In step two, we further included external shame as a predictor and the model was also significant and accounted for 20% of the anger-out variance. In the final model, depression ( $\beta = .31, p \leq .001$ ) and external shame ( $\beta = .21, p = .008$ ) were both significant predictors of anger-out (Table 3).

*Anger-control.* Similar statistical procedures were conducted in order to explore the significant predictors of anger-control (measured by STAXI) (Table 2). In step one, we entered age, years of education and depressive symptoms as predictor variables and they produced a statistically significant model,  $F_{(3,204)} = 23.49, p < .001$ , accounting for 25% of anger-control variance. In step two, we further included external shame as a predictor and the model was also significant and accounted for 28% of the anger-control variance. In this final model, age ( $\beta = -.26, p \leq .001$ ), depression ( $\beta = -.26, p \leq .001$ )

Table 3. Model summary and Beta values for hierarchical multiple regression analysis for State-Anger and Anger-Out (STAXI) as dependent variables ( $N = 208$ )

	State-anger				Anger-out			
	$R$	$R^2$	$F$	$\beta$	$R$	$R^2$	$F$	$\beta$
<b>Step 1</b>	.46	.21	54.845***		.43	.18	45.891***	
Depression				.459***				.427***
<b>Step 2</b>	.51	.25	13.315***		.46	.20	7.205**	
Depression				.300***				.306***
External shame				.271***				.206**

Note: \*\* $p \leq .01$ , \*\*\* $p \leq .001$

and external shame ( $\beta = -.26$ ,  $p \leq .001$ ) had an independent and significant effect on the anger-control variance (Table 2).

### Study II: Anger, Shame, Depression, and Paranoia

**Correlation analysis.** External shame had a high and significant correlation with paranoia beliefs ( $r = .62$ ,  $p < .001$ ). Regarding angry feelings, there were significant and positive correlations between multi-dimensions of anger and paranoia beliefs. In particular, paranoia was significantly and positively correlated with trait-anger temperament ( $r = .62$ ,  $p < .001$ ), state anger ( $r = .44$ ,  $p < .001$ ), anger-out ( $r = .41$ ,  $p < .001$ ) and anger-in ( $r = .28$ ,  $p < .001$ ). In contrast, paranoia beliefs were negatively associated with anger-control ( $r = -.39$ ,  $p < .001$ ). Additionally, there was a significant and positive correlation between depressive symptoms and paranoia beliefs ( $r = .61$ ,  $p < .001$ ).

**Regression analysis.** Finally, in order to understand these results and the relative contribution of depressive symptoms and external shame to the prediction of paranoia beliefs, a hierarchical multiple regression analysis was conducted. In this analysis, we used age, years of education, depression symptoms (DASS-42), external shame (measured by OAS), Trait-Anger temperament and state-anger (subscales measured by STAXI) to predict paranoia beliefs (measured by GPS) (Table 4). In step one, we entered age, years of education and depressive symptoms as predictor variables and they produced a statistically significant model,  $F_{(3,204)} = 42.62$ ,  $p < .001$ , accounting for 38% of the paranoia variance. In step two, we further included external shame as a predictor and the model was also significant and accounted for 48% of the paranoia variance. In the final model, we further introduced trait-anger temperament, state-anger, anger-out, anger-in and anger-control as predictor variables and they produced a statistically significant model, which accounted for 54% of total variance in paranoia.

In this final model, trait-anger temperament was the best predictor ( $\beta = .34$ ,  $p \leq .001$ ), followed by external shame ( $\beta = .29$ ,  $p \leq .001$ ) and depressive symptoms ( $\beta = .27$ ,  $p \leq .001$ ) (Table 4).

Table 4. Model summary and beta values for hierarchical multiple regression analysis for paranoia (GPS) as dependent variable ( $N = 208$ )

	$R$	$R^2$	$F$	$\beta$
<b>Step 1</b>	.62	.39	42.619***	
Age				.006
Years Education				-.098
Depression				.597***
<b>Step 2</b>	.70	.49	42.218***	
Age				.024
Years Education				-.109
Depression				.360***
External shame				.403***
<b>Step 3</b>	.75	.56	5.823***	
Age				.080
Years Education				-.020
Depression				.269***
External shame				.291***
Trait-anger				.336***
State-anger				.020
Anger-Out				-.006
Anger-in				.019
Anger-control				.035

Note: GPS = General Paranoia Scale; \*\*\* $p \leq .001$

## Discussion

Research in emotion processing has shown the existence of integrated circuits in our brain that lead to differ-

ent types of emotions, which regulate our motivations (LeDoux, 1998; Panksepp, 1998). In particular, anger and shame feelings are linked to the threat-defensive system. Although these emotions have adaptive and safety functions, they are often associated with various clinical conditions (Gilbert & Miles, 2000). The goal of the present study was to explore the contribution of shame and depression to the prediction of the anger components. Furthermore, it aimed to study the impact of these threat-defensive emotions (i.e., anger, external shame and depression) on paranoia.

Regarding demographic variables, the results showed that individuals with more years of education tend to present lower levels of anger temperament and propensity to experience and express anger without provocation stimulus, as well as paranoia beliefs. These results may be due to the higher levels of literacy, which may allow the learning and use of more adaptive strategies to deal with dispositional anger-temperament, and paranoia ideation (e.g., re-evaluation of threat stimulus, that is an ability recruited by our evolved brain; LeDoux, 1998; Panksepp, 1998). Additionally, results showed that older individuals seem to have greater attempts to control their anger feelings. In our point of view, this result seems to be related to maturity and mastery of certain skills that may facilitate coping with anger.

Results from Study I about the relationship between anger, shame and depression revealed that when people believe that they exist in the mind of others as inferior and devalued, they tend to have more anger-proneness, to experience an intense transitory reaction of anger, to suppress feelings of anger and irritability and to express the anger outwardly. As expected, lower levels of external shame are associated with a higher ability to control angry feelings in an adaptive way. These findings support the bio-psychosocial model of shame (Gilbert, 1998, 2000 a, b, 2003). According to this approach, shame is a self-conscious emotion that arises in competition dynamics for social attractiveness, emerging from our evolved cognitive competences for processing social and self-information (Gilbert, 1998). Thus, it evolved as a defensive strategy to keep oneself safe from potential attacks (e.g., punishment, rejection and criticism) from others. This experience of seeing the other as a threat to the self and the self-identity can trigger two major defences: one is the internalized shaming response, when the individual adopts a subordinate strategy associated with self-devaluation and self-criticism and the other is an externalizing and humiliated response when the individual displays dominant and aggressive behaviours (e.g., anger) (Gilbert, 1998, 2000 a, b, 2003). Moreover, shame, as a self-centred emotion, is an output of the de-

fence-threat system, which recruits negative and threat based emotions (e.g. anger) (Gilbert, 1998, 2000 a, b, 2003).

This study also demonstrated that external shame is highly linked to depressive symptoms, as expected and in line with the state of art of shame and shame memories (e.g., Matos et al., 2013; Pinto-Gouveia et al., 2012). Finally, results from correlation analyses suggested that feelings of anger, particularly specific dimensions (trait-anger temperament, state anger, anger-in, and anger-out) are associated with depressive symptoms. In contrast, individuals who are able to control their anger expression tend to experience lower levels of depressive symptoms. Overall, these findings demonstrate that when the threat system is switched on, it triggers threat-defensive emotions (such as anger, sadness, anxiety and disgust that alert and urge us to take action and do something about the threat stimulus in order to self-protect.

Depression can arise when certain basic human social needs for affection, sense of belonging and emotional support are blocked or people cannot create these relationships (Gilbert, 1989, 1993). Others social marks for depression are competitive defeats and loss of control over social resources, which are linked to different types of depressive symptoms, such as anhedonia, shame, anger, frustration and pessimism (Gilbert, 1993; Keller & Nesse, 2006). Clinical evidence shows that depressed patients report irritable mood and associated anger. Indeed, this involuntary defeat strategy is often accompanied by frustration that may underpin anger feelings (Sloman & Gilbert, 2000).

Taking these findings together, we further investigated the contribution of demographic variables (age and years of education), external shame and depressive symptoms to the prediction of various components of angry feelings. In particular, the trait-anger temperament and reaction was explained by heightened feelings of external shame and depressive symptoms, less literacy and youth. Results also showed that external shame and depressive symptoms have a significant and independent contribution for current feelings of anger (state-anger) and for the expression of anger towards people and objects (anger-out). In addition, our findings revealed that older individuals, who have lower levels of depressive symptoms and external shame, tend to control the expression of anger.

Concerning the results from Study II about anger, shame, depression and paranoia, we found that external shame is associated with paranoid beliefs. As expected, depression is linked to paranoid beliefs. These findings are in accordance with prior research (Pinto-Gouveia et

al., 2012) that shows the impact of emotional memories through external shame on paranoid beliefs. Our results add to previous research that individuals who have more trait-anger temperament and express anger outwardly and inwardly, tend to have more paranoid beliefs. Additionally, individuals with difficulties in controlling the feelings of anger also tend to have more paranoid beliefs.

A key finding in this study was that trait-anger temperament appeared as the best global predictor of paranoid beliefs, followed by external shame and depressive symptoms. Overall, these findings are in line with the evolutionary and bio-psychosocial model of shame (Gilbert, 1998). So, individuals who perceive themselves as inferior to others and feel that are put down, rejected, criticized and excluded by others may then develop suspicious and paranoid beliefs in order to create a sense of personal security (Gilbert et al., 2005; Freeman et al., 2005). This externalization and counter-attack response is mostly associated to feelings of anger and revenge fantasies. This automatic defensive response involves an over-activation of the social rank mentality and an under-stimulation of the safeness system (Gilbert, 2000a, 2003).

This study contributes to a better understanding of the nature of the anger response and its different components, highlighting how shame and depression are related to anger. Furthermore, this study may allow a better knowledge about the role of anger, external shame and depression on paranoia. Despite the use of a non-clinical sample, some clinical implications might arise from our findings. Firstly, in relation to patients who have anger feelings and aggressive behaviours, it seems particularly appropriate to put in the clinical picture issues related to external shame (Gilbert, 1998, 2000a,b, 2003; Pinto-Gouveia et al., 2012). Moreover, for paranoia, our results emphasize the importance of treating not only external shame and low mood, but also anger. This suggests that the development of adaptive strategies may be useful to cope with anger. For instance, compassion focused therapy appears to be an adequate therapeutic approach to address this threat-defensive system (e.g., anger, shame, depression, paranoia) (Gilbert, 2000a).

There are some limitations in this study. First, this is a cross-sectional design and no causal conclusions can be drawn from our results. Future prospective studies should be carried out to enhance the understanding on the causal relation between the variables.

Secondly, our findings should be replicated in other populations, such as clinical samples, adolescents and elderly. Finally, our results are based on self-report measures, therefore the use of other assessment methods (for example, clinical interviews focused on shame and

anger features) seems to be useful and necessary. Nonetheless, this study seems to improve the knowledge about the nature of anger response.

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