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Shame, Guilt, and Anger: Their Cognitive, Physiological, and Behavioral Correlates

Monica Pivetti[1] · **Marina Camodeca**[2] · **Maria Rapino**[1]

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Abstract Within the framework of the Component Process Model, the present study focuses on the emotions of shame, guilt, and anger, and aims at exploring their cognitive, physiological, and behavioral correlates. The participants were 124 Italian undergraduate students, who were asked to report an episode, from their autobiographical memory, about a self-conscious emotion that had occurred to them in the recent past. After that, they were asked to rate a large number of possible reactions about thoughts, bodily sensations, and action tendencies that they experienced during that episode. Our results generally support the idea that shame, guilt, and anger elicit different cognitive, physical, and behavioral patterns. These reactive systems may influence emotional and social adjustment in young adults. In particular, shame did not appear to be associated with aggressive tendencies, but it was characterized by the sensation of being a failure, gaze aversion, and by a low awareness of hurting and transgressing. Both guilt and anger were characterized by norm violation, whereas guilt alone was related to a tendency to repair.

Keywords Psychology students · Guilt · Shame · Anger · Behavioral correlates

Emotions influence daily life and social adjustment, and are known to guide behaviors and to motivate actions (Eisenberg 2000; Lemerise and Arsenio 2000). They refer to a personal reaction to an event and are characterized by physiological and behavioral changes. Within the framework of the Component Process Model (CPM; Scherer 2005), emotion is defined as "an episode of interrelated, synchronized changes in the states of all or most of the five organism subsystems in response to the evaluation of an external event or an internal stimulus as relevant to major concerns of the organism" (Scherer 2005, p. 697). The five subsystems, or components, of an emotion are the following: "cognitive component (appraisal), neurophysiological component (bodily symptoms), motivational component (action tendencies), motor expression component (facial and vocal expression), and subjective feeling component (emotional experience)" (Scherer 2005, p. 691). The specific emotion experienced consists of the synchronization of all of these systems during an emotion episode (Scherer 1984; 2005).

Some authors have pointed out that the motor expression dimension is related to the bodily sensations as they emphasize externally observable emotional responses, such as coughing and flushing (Kleinginna and Kleinginna 1981; van der Veek et al. 2012). In a sense, bodily symptoms mainly consist of internal events (e.g., lump in throat), while facial and vocal expressions consist of observable reactions to those internal events (e.g., trembling voice). However, they both have to do with expressions, such as blushing or nervous laughter, and with posture, such as shifting posture restlessly and trembling (Fontaine et al. 2006).

As for the motivational component, Frijda (1986) suggests that emotions spread from the awareness of a certain action tendency, which is present prior to execution. Action tendency is the readiness to execute a given action. For example, the emotion of anger is mainly reflected in a tendency to break a relationship with the environment: "I'm mad at him so I am punching him in the face". Scherer (2005) included action

✉ Monica Pivetti
m.pivetti@unich.it

[1] Department of Psychological, Health and Territorial Sciences, (Di.S.P.U.Ter.), University of Chieti-Pescara, Chieti, Italy

[2] Department of Neurosciences, Imaging and Clinical Sciences, University of Chieti-Pescara, Chieti, Italy

tendency in his CPM, by introducing motivational changes as one of the underpinnings of action tendencies. Consequently, emotions such as shame, guilt, or anger have an adaptive function for individual wellbeing, in terms of the preparation of action tendencies (e.g., fight or flight, in the case of anger).

Emotions are usually classified as basic or self-conscious. The former develop earlier, are biologically based, and are characterized by prototypic and universal facial expressions, whereas the latter are influenced by culture, need superior cognitive skills, and involve a heightened sense of awareness and evaluation of the self (Lewis 1992). Some of these secondary emotions, such as shame and guilt, have been viewed as playing a fundamental role in morality, as they influence the evaluation of what is right and wrong, they reflect the tendency to take the responsibility for one's own actions, and eventually motivate moral behavior (Eisenberg 2000; Tangney et al. 2007). Moreover, a growing body of literature has also considered some basic emotions, such as anger and fear, as having an important role in regulating moral behavior and in fostering social competence (Rieffe et al. 2012).

The socially adapted expression of these emotions can affect a person's perception in terms of moral character, with people expressing feelings of guilt or shame and inhibiting angry reactions, perceived as more positive on a number of attributes, including moral motivation and social attunement, than people who failed to report such feelings (Stearns and Parrott 2012).

The present study focuses on the emotions of shame, guilt, and anger, and aims to explore the ways in which the emotion components illustrated earlier coordinated with each other to characterize a specific emotion (Scherer 2005). In particular, we were interested in finding the cognitive, physiological, and behavioral correlates of these emotions as elicited by real episodes reported by the participants.

Studies on the emotions of shame, guilt, and anger focused on their antecedents, correlates, and appraisal types (e.g., Scherer et al. 2004; Tangney and Dearing 2003). Theoretical suggestions and empirical data for particular reaction patterns of these emotions are disseminated across the literature. Shame and guilt are generally considered to be the most important adaptive moral, or social, emotions, because they tend to assure the adherence to social norms through their internalization, without requiring the use of external sanctions. Although both guilt and shame share many similarities, they present specific characteristics.

Guilt appears to be the more moral emotion of the two, and is considered a precursor of conscience (Bybee 1998). People experience it after they feel that they are responsible for causing harm to someone else or for violating internalized standards of conduct. It is a communal-oriented emotion, leading to the reparation of the harm done and to the restoration of the balance in interpersonal relationships (e.g., Bybee 1998; Fontaine et al. 2006). Guilt is generally less painful and devastating than shame because the primary concern is with a specific behavior (committed or omitted), somewhat separate from the self (Tangney and Dearing 2003). Guilt involves feelings of tension, self-blame, regret, pangs of conscience, rumination, and sadness, but it does not affect one's core identity (Eisenberg 2000).

Shame, on the contrary, beside being experienced after hurting someone, is likely to arise also from non-moral situations, such as when one shows incompetence, fails in a performance, or behaves in a socially inappropriate way (Menesini and Camodeca 2008; Olthof et al. 2000; Smith et al. 2002). Shame is characterized by the experience of being exposed to a real or imagined rejecting audience, it is accompanied by a concern for one's damaged image and by self-devaluation, and it is followed by a tendency to hide or disappear (Fontaine et al. 2006; Lewis 1992; Smith et al. 2002). Adults report that shame experiences are more painful and intense than guilt experiences, generally because the focus of shame is the entire self, which feels evaluated, exposed, inferior, and degraded.

Apart from its social and moral aspects, shame also presents a maladaptive aspect, associated with anger, hostility, resentment, irritability, and the externalization of blame, which, in turn, may foster aggressive reactions (Tangney et al. 1996, 2007; Thomaes et al. 2011). A common cause of anger is the loss of self-esteem or personal pride, which is typical of shame. Therefore, given that shame is directed toward the self, which feels devalued and judged by others, an angry reaction could be seen as a defensive response in the attempt to protect one's own self-esteem (Thomaes et al. 2011). The hostility that the ashamed person feels toward the self may be redirected toward the disapproving and rejecting other, with the aim of regaining a sense of control and superiority. Eventually, when the ashamed individual recognizes that his/her anger is inappropriate, he/she may feel an even stronger feeling of shame, thus triggering a vicious circle.

Given its association with shame and its role in motivating (non) moral behavior, in recent research even a basic emotion such as anger has been examined together with self-conscious emotions as a predictor or a correlate of moral behavior (Rieffe et al. 2012). In fact, anger guides moral judgments and behaviors, so that those who feel angry may think they are right, attribute hostile intentions, tend not to feel responsible, and blame someone or something else, which often contributes to aggression (Lemerise and Arsenio 2000). In any case, in the long term, such outbursts of anger contribute to weakening and deteriorating social relationships.

These emotions also differ on the grounds of their physical reactions. Wallbott and Scherer (1989) described shame, guilt, and anger in terms of verbal behavior, non-verbal reactions, and physiological symptoms. As for verbal reactions, shame and guilt were equally related to silence and speech disturbances, and shame was more related to short utterances than

guilt. Ashamed people tend to remain silent or to use a low tone of voice, whereas individuals who feel guilty tend to admit their own responsibility, apologize, and confess (Barrett 2005).

Shame is regarded as a more intense and more dysphoric feeling, occurring more suddenly and accompanied by high temperature and greater physiological changes in facial expression (e.g., blushing), in voice, and in gesturing than guilt, which, besides irregular breathing and a fast heart-beat, is characterized by minor physiological response symptoms (Scherer and Wallbott 1994; Wallbott and Scherer 1989). When experiencing shame, individuals feel physically small and inferior to others. As a result, they might feel great pressure to hide and avoid further embarrassment, and are less inclined to admit what they had done. They also wish they had acted differently, and, as a consequence, avoid direct gazes, hunch their shoulders, lower their head, cover their face, or stay still (Bafunno and Camodeca 2013; Barrett 2005). Therefore, shame, even if not so long-lasting as guilt, is characterized by a very high level of control attempts (Scherer and Wallbott 1994). The reaction patterns of anger are generally characterized by changes in physiological aspects, facial expression, voice, and gestures, such as a high temperature, rush of blood, hot head, blushing, faster heart beats, trembling, muscular tension, abrupt movements, yells, lengthy and loud utterances, and unpleasant, unspecific arousal (Scherer and Wallbott 1994; Wallbott and Scherer 1989).

We also considered whether gender accounted for variability in emotion expressions and reactions. Usually, shame and guilt are more often reported by women than by men, whereas anger is more typical of men than women, which may indicate women's greater concern for social wellbeing and relationships (Else-Quest et al. 2012; Ferguson and Crowley 1997). However, personal and cultural stereotypes may have a role, and real differences between men and women in experiencing these emotions could be minimal (Plant et al. 2000; Sharkin 1993). In contrast, differences in correlates or expressions could be detected. For instance, although shame was associated with inside anger and guilt with anger control in both genders (Lutwak et al. 2001), guilt was only found to be associated with self-punishment in females. Moreover, when facing an angry reaction, females are more prone to turn hostility inside instead of showing it outwardly as it is the case for males, who more often display outbursts of anger or aggression (Ferguson and Crowley 1997; Sharkin 1993).

The general aim of this work was to uncover the content of the biographical episodes related to the emotions of shame, guilt, and anger, and to investigate the characteristics of these emotions as emerged from several questions posed to participants. Therefore, we explored the reaction patterns associated with the three emotions, as experienced in a sample of Italian undergraduate male and female students (Anolli and Pascucci 2005). We considered the reactions related to (1) cognitive appraisal, (2) action tendencies, and (3) physiological changes, operationalized as a combination of the neurophysiological and motor expression components (Kleinginna and Kleinginna 1981). We expected the reaction patterns associated with each of the three emotions to be congruent with each other and with the literature, and to contribute to better describe the different aspects characterizing each emotion (Fontaine et al. 2006; Scherer and Wallbott 1994). Moreover, gender differences in the reaction patterns were investigated. Although we did not expect male and female participants to differ in the emotional content of their reported episode, we hypothesized that their cognitive, physiological, and behavioral reactions were the results of gender socialization and mirrored social and cultural stereotypes (Plant et al. 2000).

Method

Sample

The sample included 134 university students (67 men, 67 women), attending Psychology courses at a medium-large sized University in central Italy. Due to missing values (see Results section), the final sample on which analyses were conducted comprised 124 students (61 men, 63 women). The participants' age ranged from 20 to 46 years ($M = 22.1$; $SD = 3.2$). All of them were Italians or naturalized Italians, and the majority (85.5 %) declared their religious background to be Catholic.

During classes, a research assistant approached the students to explain the project. If they agreed to participate, an invitation email was sent to them with a link to an electronic questionnaire to be filled out. In order to obtain a gender-balanced sample, a further 24 male participants were asked to fill in a written questionnaire during classes. We tested the hypothesis that the responses given in class by these 24 male participants did not differ from those provided via the web. Thus, we reran the factor analyses (explained in the Results section) on the emotion reaction patterns without the 24 participants. Results showed similar dimensions, item loadings, and explained variance in the two samples. Participation was voluntary. All the enrolled participants provided written informed consent to participate in the study, in compliance with the Code of Ethics of the Italian Psychology Association. Data collection was part of a larger cross-cultural research project on values and emotion (University of Ghent, Belgium).

Instruments

Participants were asked to answer a questionnaire, which comprised several sections. Here we describe the ones we used in the present study.

Narratives of Emotional Episodes Following a narrative approach, we asked participants to recall and write down, from their autobiographical memory, the most recent situation in which they had experienced a self-conscious emotion, such as guilt (or remorse, regret), shame (or embarrassment, shyness, humiliation), and anger (towards someone else) (Silfver 2007).

Emotional Experience of the Emotion Episodes After reporting the personal episode, participants were asked to rate a great number of possible reactions to it, by filling in the Multicomponential Self-Conscious Emotion Scale (MCSCES; Fontaine and Dillen 2011). The 79 items we used comprised the following aspects: Thoughts (38 items, e.g., I fell short of the expectations of others); Bodily sensations and expressions (18 items, e.g., I laughed nervously); Action tendencies (23 items, e.g., I escaped from or fled the situation). Participants were asked to describe how they felt/what happened in the specific emotion episode they have reported, according to a 7-point scale (1 = *I totally disagree*; 7 = *I totally agree*).

Results

Analysis of Narratives

Each narrative provided by participants was classified according to whether it reported guilt, shame, or anger (Dey 1993; Flick 2002). Two independent judges (MP and MC) coded the whole sample on the grounds of the common definitions of shame, guilt, and anger (Anolli and Pascucci 2005; Hoffman 2000; Tangney et al. 2007). The judges considered episodes of shame to be those in which a personal failure, incompetence, or inappropriate behavior was reported. Other elements included the focus of attention upon the self, the concern about the deterioration of global image and about its public evaluation. Common reactions included the desire to flee and to hide, but also the outbursts of anger as a consequence of humiliation. An example is the following: "One day, I was walking along the street during a town festival, and I slipped and fell over. All my friends saw me and I swear that I immediately felt very embarrassed in the eyes of my friends and in particular of people I did not know" (male, 789).

The guilt category included episodes in which the protagonist caused harm or distress to someone else and was concerned about the effect of his/her behavior. We also considered as guilt situations of regret or remorse. Guilt reactions included rumination, sadness, self-blame, as well as the desire to confess, apologize, and repair (Bybee 1998; Fontaine et al. 2006). An example is the following: "I felt guilty for not being close to my mother in a very difficult moment for her… I reacted by crying…" (female, 1037). Another example about regret is this: "I felt remorse (…) about the loss of a dearly loved relative. I feel remorse for not giving him a final farewell, since I would never have expected he might die any minute, all of a sudden" (female, 893).

An episode was considered to report anger if it included a reaction with a high level of arousal, a hostile approach orientation, and the intention to undertake aggressive actions to restore justice (Frijda 1986; Iyer et al. 2007). Common antecedents were interpersonal problems, damage to personal property, or frustration (Scherer 1984). An example is the following: "I was on a bus, and a guy shoved away an old person and took [his/her] seat. I was about to stand up and punch him. I didn't care about the other passengers, I just wanted to hit him and hurt him real bad" (male, 14).

The two independent judges coded the whole sample and reached a good agreement ($k = .80$). Inconsistencies between judges were resolved by discussion. In doubtful cases or if two or more emotions were reported in the same episode, judges tried to isolate and code the prevalent one (e.g., Pivetti et al. 2012). An example is the following: "When I discovered that my boyfriend had hidden something from me, I felt regret for having forgiven him in the past and angry with myself for letting him cheat me. I reacted very angrily, I kicked, shouted and cried. I felt guilty for having always been so loyal to him" (female, 1036). This episode was coded as anger by one judge and as guilt by the other one. After discussion, it was coded as anger, because guilt was not due to a harm done or to a personal remorse, and the main reaction was anger, as suggested by the strong reactions and by the bitter consideration of the relationship.

If it was not possible to discriminate the emotion, or the episode reported a non-pertinent emotion (e.g., joy), we coded a missing value, as in the following example: "I was happy about receiving a surprise from a dear person, I wasn't expecting anything. I was surprised. My reaction was to give him/her a hug to thank him/her and I invited him/her over for lunch" (female, 1124).

As a whole, the participants provided 54 episodes of shame, 51 episodes of guilt, and 19 episodes of anger towards others. Ten episodes had a missing code and were not included in the analyses. Episodes referred mainly to students' friends (19.4 %), to situations where a boy/girlfriend was involved (14.9 %), and to university life (11.9 %). A cross-tabulation (χ^2 (20) = 44.27; $p = .001$) showed that shame was most frequently reported during interactions with friends (26.9 %), with boy/girlfriend (17.3 %), and during everyday situations (17.3 %). Guilt was mainly reported during interactions with friends (22 %) and university life (18 %). Anger was mostly directed towards a boy/girlfriend (25 %) and towards flatmates (25 %).

Analysis of the Emotional Reaction Patterns

In order to explore the dimensions behind the 79 items of the MCSCES, we ran three factor analyses, using a principal axis

factoring extraction with a varimax rotation, on the items belonging to each of the three aspects: Thoughts (38 items), Bodily sensations and expressions (18 items), and Action tendencies (23 items).

A first factor analysis on the 38 items about Thoughts showed a two-factor solution and accounted for 33.7 % of the total variance. KMO (Kaiser-Meyer-Olkin Measure of Sampling Adequacy) was acceptable (.82). Bartlett's Test of Sphericity was significant (χ^2 (703) = 2833.5; $p < .001$). Factor 1 accounted for 22.4 % of the total variance. It was named *being a failure* and comprised 20 items on thoughts referring to a sense of failure and disappointment after falling short of other people's expectations (e.g., "I lost my self-esteem", "I thought I was a failure", "I thought to be worthless"). Factor 2 accounted for 11.3 % of the total variance. It was named *awareness of hurting and transgressing* and comprised 9 items on thoughts referring to the awareness of hurting others and of violating social conventions (e.g., "I thought that my actions might harm others", "I transgressed certain social conventions", "What happened is serious"). Nine items loaded lower than .35 or cross-loaded and were eliminated.

A second factor analysis on Bodily sensations and expressions (18 items) showed a two-factor solution and accounted for 31.6 % of the total variance. KMO was acceptable (.82) and Bartlett's Test of Sphericity was significant (χ^2 (153) = 793; $p < .001$). Factor 1 accounted for 15.8 % of the total variance. It was named *freezing* and comprised 8 items on bodily sensations and expressions referring to feeling cold, paralyzed, or helpless, and to trying of being smaller and smaller (e.g., "I felt a lump in my throat", "I trembled, I felt shivers", "I took a slumped posture", "I made myself small"). Factor 2 accounted for 15.8 % of the total variance. It was named *gaze aversion* and comprised 7 items on bodily sensations and expressions pointing to the avoidance of eye contact and to the feeling of warmth (e.g., "I avoided eye contact", "I blushed"). Three items loaded lower than .35 or cross-loaded and were eliminated.

A third factor analysis on Action tendencies (23 items) showed a three-factor solution and accounted for 41.7 % of the total variance. KMO was acceptable (.79) and Bartlett's Test of Sphericity was significant (χ^2 (253) = 1302; $p < .001$). Factor 1 accounted for 18.8 % of the total variance. It was named *desire to repair* and comprised 10 items on action tendencies pointing to the desire to apologize and repair the damage done (e.g., "I wanted to undo the harm or wrong done", "I wanted to repair the damage that I had caused"). Factor 2 accounted for 12.9 % of the total variance. It was named *desire to escape* and comprised 6 items referring to the desire to deny what happened and escape from the situation (e.g., "I wanted to escape from or flee from the situation", "I wanted to disappear/ hide"). Factor 3 accounted for 10 % of variance. It was named *aggression/ hostility* and grouped 4 items on the tendency to verbally and physically attack others (e.g., "I wanted to be aggressive towards somebody/ others: kick or punch", "I wanted to take revenge", "I wanted to curse and swear against somebody/ others"). Three items loaded lower than .35 or cross-loaded and were eliminated.

Descriptive statistics and reliabilities of the 7 scales yielded by the factor analyses are shown in Table 1. Study variables were all inter-correlated, with the exception of aggression/ hostility, which was only related to the awareness of hurting and transgressing, and of gaze aversion, which was only associated with being a failure, freezing, and with the desire to escape.

Associations Between Narratives and Reaction Patterns of the Emotions

We separately analyzed the reaction patterns of Thoughts, Bodily sensations and expression, and Action tendencies, in order to investigate which ones characterized each emotion

Table 1 Descriptive statistics, reliabilities, and correlations of the study variables

	Reactions	1.	2.	3.	4.	5.	6.	7.
Thoughts	1.Being a failure	1						
	2.Awareness of hurting and transgressing	.49***	1					
Bodily sensations and expressions	3.Freezing	.39***	.38***	1				
	4.Gaze aversion	.19**	.03	.31***	1			
Action tendencies	5.Desire to repair	.50***	.62***	.27**	.01	1		
	6.Desire to escape	.59***	.35***	.40***	.45***	.43***	1	
	7.Aggression/ Hostility	.16	.29**	.14	-.04	.01	.23	1
	Mean	2.91	2.83	2.84	3.19	3.92	3.51	2.41
	SD	1.11	1.09	1.10	1.21	1.38	1.35	1.58
	Cronbach's α	.93	.82	.78	.72	.86	.79	.83
	No. of items	20	9	8	7	10	6	4

**$p <= .01$. *** $p <= .001$

Table 2 Means and standard deviations (in parentheses) of reaction patterns for each emotion

		Shame	Guilt	Anger
Thoughts	Thinking of being a failure	2.87 (1.14)	3.05 (1.13)	2.65 (.93)
	Awareness of hurting and transgressing	2.28 (.83)	3.24 (1.11)	3.30 (1.02)
Bodily sensations and expressions	Freezing	2.74 (.92)	2.93 (1.15)	3.06 (1.44)
	Gaze aversion	3.74 (1.24)	2.83 (1.00)	2.51 (.93)
Action tendency	Trying to repair/apologize	3.32 (1.29)	4.78 (1.09)	3.28 (1.03)
	Desire to escape	3.57 (1.37)	3.65 (1.41)	2.90 (1.11)
	Aggression/hostility	2.00 (1.26)	2.27 (1.46)	2.36 (1.53)

(i.e., shame, guilt, and anger, as emerged in the narrated episode).

Firstly, we carried out a 3 (shame, guilt, and anger) × 2 (Thoughts: being a failure vs. awareness of hurting and transgressing) mixed model repeated measures multivariate analysis of variance (MANOVA), where shame, guilt, and anger varied between subjects as a result of grouping from the narrative analysis. All the effects are reported as significant at $p < .001$, unless otherwise stated. The analysis yielded no significant main effects of the two evaluation dimensions ($p > .05$). The two-way interaction between narratives and evaluation dimensions was significant ($F(2, 120) = 13.52$; $\eta^2_p = .18$). Observed power for this test computed using a .05 significance level was .99. This effect indicates that thoughts differed in case of shame, guilt and anger. Inspection of means (Table 2) and analysis of simple main effects confirmed that as for shame, participants reported to think of being a failure more than of being aware of hurting and transgressing ($F(1, 120) = 18.65$; $\eta^2_p = .13$). As for guilt, no significant differences emerged ($p > .05$), whereas for anger the participants reported more awareness of hurting and transgressing than thinking of being a failure ($F(1, 120) = 7.28$; $p = .008$; $\eta^2_p = .06$). Moreover, participants attributed more awareness of hurting and transgressing to guilt and anger than to shame ($F(2, 120) = 15.19$; $\eta^2_p = .20$). There were no significant differences for thinking of being a failure ($p > .05$). Figure 1 depicts these differences in Thoughts. On the overall, shame seemed to be characterized by thinking of being a failure, and guilt and anger by the awareness of hurting and transgressing.

Secondly, we carried out a 3 (shame, guilt, and anger) × 2 (Bodily sensation: freezing vs. gaze aversion) mixed model repeated measures MANOVA, where shame, guilt, and anger varied between subjects as a result of grouping from the narrative analysis. All the effects are reported as significant at $p < .001$, unless otherwise stated. The analysis yielded no significant main effects of the two bodily sensations ($p > .05$). The two-way interaction between narratives and bodily sensation dimensions was significant ($F(2, 118) = 15.95$; $\eta^2_p = .21$). Power to detect the effect was .99. As for shame, participants reported more gaze aversion than freezing ($F(1, 118) = 36.47$; $\eta^2_p = .24$). No significant differences emerged for guilt and anger ($p > .05$). Moreover, participants reported more gaze aversion for shame than for guilt and for anger episodes ($F(2, 118) = 12.65$; $\eta^2_p = .18$). No significant differences emerged for freezing ($p > .05$). Differences in Bodily sensations are displayed in Fig. 2. Thus, shame was associated with more gaze aversion than guilt and anger. However, freezing did not differ between shame, guilt, and anger.

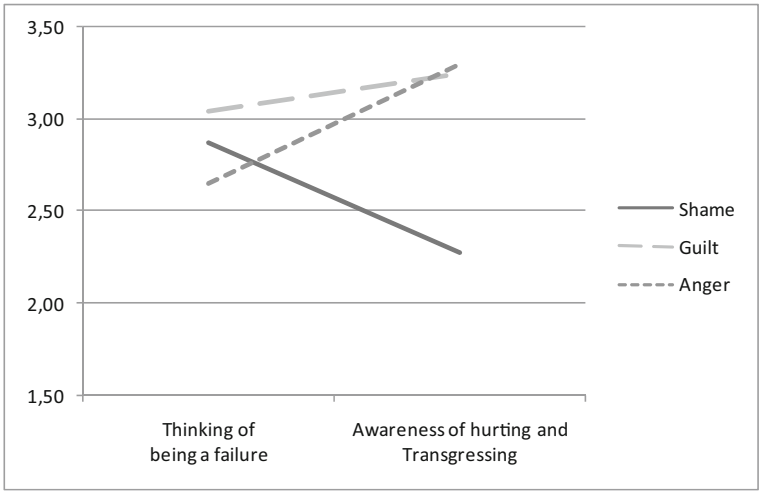

Fig. 1 Cognitive component: thoughts

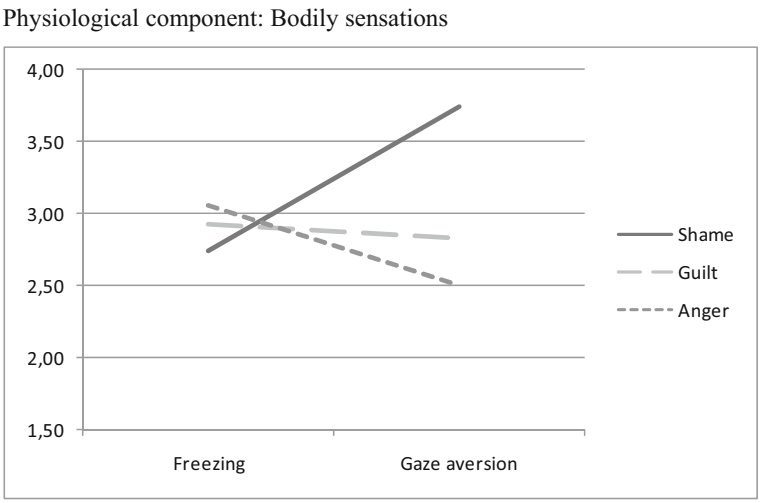

Fig. 2 Physiological component: bodily sensations

Finally, we carried out a 3 (shame, guilt, and anger) × 3 (Action tendency: desire to repair vs. desire to escape vs. aggression/ hostility) mixed model repeated measures MANOVA, where shame, guilt, and anger varied between subjects as a result of grouping from the narrative analysis. All effects are reported as significant at $p < .001$, unless otherwise stated. The analysis yielded a significant main effect of the 3 action tendencies ($F(2, 117) = 17.94$; $\eta^2_p = .24$). Power to detect the effect was 1. On the whole, participant reported to wish to repair more than to escape and more than to aggress, and reported more desire to escape than to aggress.

The two-way interaction between narratives and action tendencies was significant ($F(4, 236) = 15.24$; $\eta^2_p = .21$). Power to detect the effect was 1. As for shame, participants reported a higher desire to repair than aggression/hostility, and more desire to escape than aggression/ hostility ($F(2, 117) = 25.66$; $\eta^2_p = .31$). As for guilt, participants reported to wish to repair more often than to escape, and more often than to be aggressive/ hostile, and more desire to escape than to be aggressive/hostile ($F(2, 117) = 48.90$; $\eta^2_p = .46$). Moreover, participants referred to desire to repair more in an episode of guilt than in an episode of shame or of anger ($F(2, 118) = 22.85$; $\eta^2_p = .28$). Participants attributed more aggression/hostility in case of anger than in case of shame or guilt ($F(2, 118) = 9.74$; $\eta^2_p = .14$). No significant differences emerged for the desire to escape ($p > .05$) (see Fig. 3). Those results support the idea that shame is characterized by the desire to hide and escape, guilt by the desire to repair, and anger by the tendency to be aggressive.

Gender Differences

Male and female students reported the three emotions equally (χ^2 (2) = 3.39; $p = .18$).

A few 2 (gender: male vs. female) × 3 (shame, guilt, and anger) ANOVAs were conducted to test gender differences.

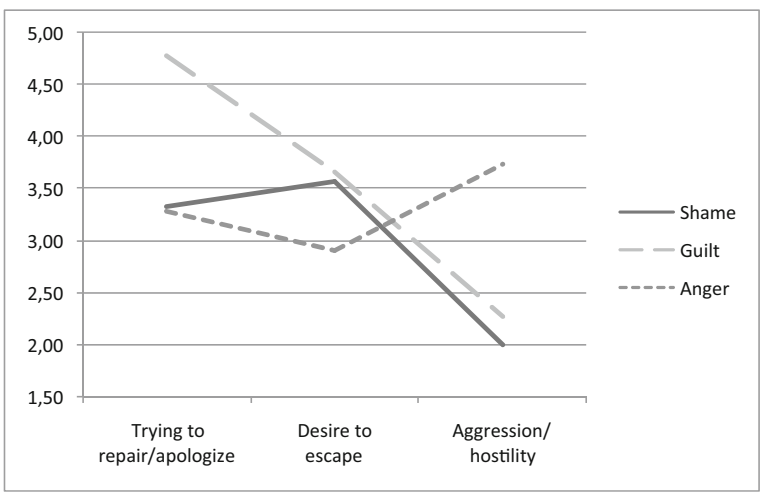

Fig. 3 Behavioral component: action tendencies

The seven categories of reaction patterns were the dependent variables. Here we only present the significant results, concerning awareness of hurting and transgressing, freezing, gaze aversion, and desire to escape. All effects are reported as significant at $p < .001$, unless stated otherwise.

As for thoughts, females reported more awareness of hurting and transgressing than males ($F(1, 123) = 4.66$; $p = .03$; $\eta^2_p = 04$; $M = 2.91$; $SD = 1.24$; $M = 2.73$; $SD = .90$). Power to detect the effect was .57.

As for bodily sensations, females reported more freezing than males ($F(1, 123) = 31.21$; $\eta^2_p = .21$; $M = 3.24$; $SD = 1.11$; $M = 2.42$; $SD = .93$). Power to detect the effect was .1. The interaction between gender and emotions was also significant in predicting freezing ($F(2, 122) = 4.56$; $p = .01$; $\eta^2_p = .07$). Power to detect the effect was .76. Female students reported more freezing in episodes of anger than in episodes of shame or guilt ($F(2, 117) = 5.14$; $p = .007$; $\eta^2_p = .08$; $M = 4.48$; $SD = 1.31$; $M = 3.07$; $SD = .80$; $M = 3.16$; $SD = 1.23$), and more freezing than males in shame ($F(1, 117) = 7.29$; $p = .008$; $\eta^2_p = .06$; $M = 3.07$; $SD = .80$; $M = 2.33$; $SD = .92$) and anger episodes ($F(1, 117) = 20.50$; $\eta^2_p = .15$; $M = 4.48$; $SD = 1.31$; $M = 2.25$; $SD = .92$). Similarly, females, as compared with males, indicated more gaze aversion ($F(1, 120) = 15.64$; $\eta^2_p = .12$; $M = 3.63$; $SD = 1.21$; $M = 2.70$; $SD = 1.02$) and more desire to escape ($F(1, 122) = 8.98$; $p = .003$; $\eta^2_p = .07$; $M = 3.94$; $SD = 1.\ 46$; $M = 3.06$; $SD = 1.07$). Power to detect the effect was .98 and .84, respectively.

Discussion

The results support our hypothesis about different, but coherent, reaction patterns associated with shame, guilt, and anger, and confirm the studies claiming that shame and guilt are characterized by different patterns. Shame appeared to be characterized by the feeling of being a failure and by a low awareness of hurting and transgressing, which was more typical of guilt and anger. This result seems to support the idea of shame as a non-moral emotion, elicited by the awareness of having failed or being ridiculed, and not by having damaged someone else (Olthof et al. 2000). Moreover, after a shameful episode, individuals tend to avoid people's eyes and feel a desire to escape, again indicating their tendency to avoid facing other people or a possible public (Smith et al. 2002). It is interesting to note that gaze aversion, which has been found typical of shame in young children (Bafunno & Camodeca, 2013), is also present in adults.

Ashamed individuals did not report a desire to aggress or to blame others, as we would have expected according to the hypothesis of shame being associated with humiliated fury and anger. In this respect, our outcomes failed to confirm the dual connotation of shame as an emotion fostering morality (Olthof et al. 2000; Menesini and Camodeca 2008) and also as a negative emotion in which low self-image leads to negative feelings and aggression (Tangney et al. 1996; Thomaes et al. 2011). Therefore, experiences of shame are depicted by characteristics indicating avoidance and low self-concept. Feelings of inadequacy, derision, withdrawal, and anxiety could be maladaptive for social adjustment and social relationships, even if the person does not react with hostility. However, if the painful feelings deriving from shame allow the person to avoid similar situations in the future or to react differently, then shame too could have an adaptive role.

Participants who reported an episode about either guilt or anger seemed well aware of having violated a norm or having hurt someone. This outcome, in the case of guilt, is in line with moral aspects and encourages people to make amends and to apologize in order to restore a positive social relationship and to appear as an honorable person (Bybee 1998). The yearning for repairing and apologizing when feeling guilt is also confirmed by the results about action tendencies.

It is interesting to note that angry people are also aware of their damaging behavior. However, unlike guilty people, they do not feel sorry for it, but respond with aggression and hostility. Therefore, we could surmise that a similar event (e.g., harm caused) may elicit either anger or guilt, and it is this deriving emotion that drives both sensations and behaviors. Unlike shame, both guilt and anger are associated with low scores in gaze aversion, indicating that these emotions are characterized by facing the situation and other people. However, in one case (anger), searching for contact foreshadows a hostile reaction, whereas, in the other (guilt), it implies the restoration of closeness. Moreover, in this study, we used triangulation to achieve corroboration of data (Jick 1979; Sandelowski 2000). In this type of procedure, "the researcher converges quantitative and qualitative data in order to provide a comprehensive analysis of the research problem. In this design, the investigator collects both forms of data at the same time during the study and then integrates the information in the interpretation of the overall results" (Creswell 2013, p. 16). We drew on the qualitative approach by content analyzing the emotional episodes as they were narrated by participants, and on quantitative approach, by describing the specific reaction patterns of shame, guilt, and anger in a quantitative way (e.g., using a Likert scale for the responses). Results showed that the two methods of collecting data lead to convergent results. For instance, the definition of shame as characterized by gaze aversion was confirmed both in the content of the emotional episodes and in the investigation of reaction patterns.

Moreover, the analysis of participants' responses shed light on some aspects that enrich and are consistent with the characteristic dimensions suggested in the literature. In fact, the narrated episodes could include one or a few aspects of those enlisted to analyze them (e.g., desire to disappear for shame), but not all aspects defining an emotion (e.g.,not all the

episodes included a sense of failure for shame). However, the participants' responses provided a coherent and detailed framework for the different experiences associated with each emotion and including cognitive, behavioral, and physiological aspects, which may contribute to delineate the characteristics of shame, guilt, and anger.

Gender differences in reporting either an episode of shame or guilt or anger have not been found. Although the literature claimed that women report more shame and guilt feelings, and react less angrily than men (cf. Else-Quest et al. 2012; Lutwak et al. 2001; Plant et al. 2000), we had no reason to believe that they would have really reported or experienced different episodes. However, some reaction patterns discriminated between them. In particular, females, in comparison with males, reported two characteristics typical of shame, namely gaze aversion and a desire to escape. The high scores in freezing also indicate a sense of helplessness and an incapacity to react properly, also expressed by physical paralysis (e.g., trembling, collapsed posture, inability to talk). The fact that these characteristics were especially experienced in episodes of anger may suggest that women are less equipped than men in coping with such situations or prefer to mitigate their reactions, instead of having outbursts of temper. Finally, women reported a higher awareness of hurting and transgressing than men, which may indicate their tendency to observe and consider their own behavior in relation to others' wellbeing. It is possible that culture, socialization practices or stereotypes are involved (Plant et al. 2000). Women may be brought up to appreciate shyness, avoid involving or embarrassing situations, hide themselves, or control their hostility. They are also expected to self-regulate, feel empathy, and not to hurt others, and are aware that if they externalized their anger or misbehave, they would incur negative environmental repercussions and blaming (Ferguson et al. 1999). However, it has also been suggested that early temperamental and relational characteristics elicit specific socialization patterns in males and females, which reinforce personal and pre-existing aspects in emotional expression (Else-Quest et al. 2012).

A few limitations and strengths in the paper have to be acknowledged. First, a larger non-student sample could allow the results to be generalized. However, the observed power indicated that a total sample of 124 participants was enough to obtain an excellent statistical power (> .90) (D'Amico et al. 2001). Some participants were recruited subsequently and filled the instruments in class; it is possible that they felt less free to report their emotional episode than those who responded online, given the presence of the administrator or other students in the class. However, episodes and questionnaires were anonymous and they were left alone to write, taking all the time they needed. Moreover, as reported in the Methods section, factor analyses with and without these participants showed no differences.

The methodology we used may be biased by memory recall (i.e., people only remember something or they report what they want to share). However, it also has some advantages, such as the fact that participants' responses correspond to what they would (or did) respond in real-life situations, the representative sample of events eliciting particular emotions, and the fact that the emotions reported are supposed to be strong in order to stick in one's memory (Smith et al. 2002; Wallbott and Scherer 1989).

Moreover, as compared with Scherer and Wallbott (1994), who used aggregated measures, we tried to specify each reaction pattern in order to have a better and more detailed picture of the reactions to moral emotions. We did not consider the subjective feeling component because we thought it was misleading to add ratings of other concurrent emotions, which could change the meaning of the narrated episode.

In sum, our results support the idea that shame, guilt, and anger elicit different cognitive, physical, and behavioral patterns and that these reactive systems may influence emotional and social adjustment in young adults. In particular, anger was associated with the awareness of norm violation, which does not lead to refraining from hurting others, however, as happens for guilty people. Paradoxically, guilt and anger have been found to be more similar to each other than shame and anger, because they share similar bodily and cognitive reactions. They both seem to motivate action, albeit in two opposite ways, one fostering social relationships and the other damaging them. On the contrary, shame appeared as a passive emotion, associated with avoidance, withdrawal, and social anxiety, not characterized by hostility or anger features, as some authors have suggested (e.g., Tangney et al. 1996; Thomaes et al. 2011). These findings are especially interesting for their contribution to understanding the relationship between shame, guilt, and anger and for providing a complete picture of several coherent dimensions for each emotion, as derived from quantitative and qualitative data.

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