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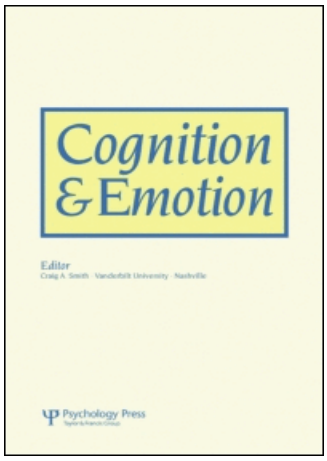

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Perceived emotional intelligence facilitates cognitive-emotional processes of adaptation to an acute stressor

Natalia S. Ramos, Pablo Fernandez-Berrocal, and Natalio Extremera

University of Malaga, Malaga, Spain

This study examined the influence of perceived emotional intelligence (PEI) and intrusive thoughts on emotional responses following a stressful event. PEI was assessed on 144 participants using the Trait Meta-Mood Scale (TMMS). The TMMS assesses perceived ability to: (1) attend to moods (Attention); (2) discriminate clearly among moods (Clarity); and (3) regulate moods (Repair). The main purpose of this paper was to examine the relationship between PEI, intrusive thoughts, and adjustment to an acute stressor induced experimentally in the laboratory, on two separate days. Finally, we examined the relationship between PEI, Inhibition, and Empathy. Results indicated that Clarity influences emotional responses on Day 1, and Repair affects emotional responses on Day 2 indirectly via intrusive thoughts, which act as a mediator. Significant associations were obtained between the three factors of the TMMS with Empathy and Inhibition. These findings suggest that individuals with higher emotional Clarity and Repair will experience less negative emotional responses and intrusive thoughts after an acute stressor, which enables them to adapt more readily to the experience.

Perceived emotional intelligence and acute stressors

People experience a variety of potentially traumatic events over the course of their lives. Individuals use different strategies to manage these situations. Depending on these strategies, the duration and psychological

Correspondence should be addressed to either: Natalia S. Ramos or Pablo Fernandez-Berrocal, University of Malaga, Faculty of Psychology, Campus de Teatinos, s/n, E-29071, Malaga, Spain. E-mail: nsramos@uma.es or berrocal@uma.es

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impact of these events may be severe and persist for a long period of time. Research on emotional intelligence (EI) has shown that people's abilities to understand and manage their emotions during stressful events are relevant to maintaining a relatively stable trajectory of healthy functioning after these events (Salovey, Bedell, Detweiler, & Mayer, 1999). EI has been defined as the ability to (a) perceive emotion, (b) use emotion to facilitate thought, (c) understand emotions, and (d) manage emotion (Mayer & Salovey, 1997). The importance of the beliefs about our own emotional abilities or perceived emotional intelligence (PEI) perhaps becomes most apparent under conditions of stress and coping, when individuals are forced to respond to emotions elicited by external events.

In order to measure more stable individual differences in PEI, Salovey, Mayer, Goldman, Turvey, and Palfai (1995) developed the Trait Meta-Mood Scale (TMMS), composed of three subscales: (1) Attention—perceived ability to attend to moods and emotions; (b) Clarity—perceived ability to discriminate clearly among feelings, and (c) Repair—perceived ability to regulate moods.

Previous research suggests that PEI influences responses to emotional arousal, provoked by everyday stressors, and consequently plays a relevant role in the coping process and in individuals' mental health (Gohm & Clore, 2002; Salovey et al., 1999; Schutte, Malouff, Simunek, Hollander, & McKenley, 2002). PEI contributes to reduced tendencies towards maladaptive coping strategies such as thought suppression or ruminative responses (Rude & McCarthy, 2003; Salovey et al., 1995), and health centre visits in period of stress (Goldman, Kraemer, & Salovey, 1996). PEI is also related to adaptive physiological and psychological coping, such as attenuated cortisol release following repeated stressors, greater habituation to repeated stressors and lower levels of intrusive thoughts and higher levels of distraction (Salovey, Woolery, Stroud, & Epel, 2002). Additionally, PEI is associated with lower levels of depression (Fernandez-Berrocal, Salovey, Vera, Extremera, & Ramos, 2005; Williams, Fernandez-Berrocal, Extremera, Ramos, & Joiner, 2004), higher vital satisfaction (Extremera & Fernandez-Berrocal, 2005), and even to adequate resolution of moral and emotional dilemmas (Fernandez-Berrocal & Extremera, 2005).

PEI and interpersonal functioning

Research also suggests a link between EI and interpersonal functioning indicators such as empathy and inhibition. Higher scores on self-reported EI were related to higher scores on perspective taking, but not to scores on

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fantasy, empathic concern, or personal distress. It should be noted that these latter three types of empathy are considered to be less emotionally adaptive than perspective taking (Schutte et al., 2001). Emotional inhibition or difficulty in expressing one's emotions openly has proved to be an indicator of worse psychological adjustment (Lepore & Smyth, 2002; Pennebaker, 1997). Individuals with a high score on EI should have fewer difficulties in expressing their emotions openly (Davies, Stankov, & Roberts, 1998; Gohm & Clore, 2000).

The effect of PEI on adjustment through intrusive thoughts

Intrusive and ruminative thoughts are mainly mental events that happen unexpectedly; they interrupt the stream of consciousness, occur repeatedly, may be positive or negative and appear in a number of ways, such as images, impulses, verbal thoughts or recurring memories (Rachman & Hodgson, 1980). Several longitudinal and experimental studies have shown that people who ruminate in response to stress are at higher risk of developing depressive symptoms and depressive disorders over time (Nolen-Hoeksema, Larson, & Grayson, 1999). Rumination may not only contribute directly to depression, but may be the underlying cause of the relationship between personality variables and depression, acting as a mediator (Nolen-Hoeksema, 2000, 2001).

Intrusive thoughts and the distress associated with them also appear to be indicators of the extent to which individuals have cognitively integrated or resolved stressful experiences. This kind of thought could be a sign of cognitive discrepancy that remains until the discrepancy disappears (Wegner, 1997). In stressful situations this discrepancy refers to the distance between the cognitive perceptions that the individuals start with, and the new situation that they face (Horowitz, 1997; Janoff-Bulman, 1992). There is growing evidence that adequate emotional expression diminishes the frequency of intrusive thoughts as well as their negative effects on mental and physical health (Lepore, Fernandez-Berrocal, Ragan, & Ramos, 2004; Lepore, Ragan, & Scott, 2000). Successful processing of intrusive thoughts depends, in part, on PEI. Thus, individuals who were high in Clarity showed greater rebound from induced negative mood and greater decline in intrusive thoughts following an experimental stressor (Salovey et al., 1995) and spent less time on intrusive thoughts in situations of acute stress (Gohm, Baumann, & Sniezek, 2001). Taken together, the findings above show that people reporting high PEI might process and assimilate more appropriately the emotions that they experienced, dealing better with emotional issues, for example, using more adaptive responses such as eliminating ruminative processes or engaging in active coping (Fernandez-Berrocal & Ramos, 2002).

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THIS STUDY

Concisely, our study examined the influence and the relationship between PEI, evaluated by the TMMS factors (Attention, Clarity, and Repair), and intrusive thoughts on emotional responses following an acute stressor induced experimentally in the laboratory on two separate days. More specifically, in keeping with the results of previous studies:

First, we hypothesised that Clarity and Repair would decrease negative emotional responses to an acute stressor on Day 1.

We predicted that Repair could influence the adaptation to an acute stressor on Day 2 in two different ways: directly on emotional responses to a stressful event, and indirectly via intrusive thoughts associated with the negative event. We tested this general prediction by four specific hypotheses:

Second, we predicted that individuals with high scores on Repair would have lower negative emotional responses.

Third, we hypothesised that individuals with high scores on Repair would have fewer intrusive thoughts.

Fourth, we predicted that higher frequency of intrusive thoughts would have higher negative emotional responses.

Fifth, we examined whether intrusive thoughts would act as a mediator between Repair and emotional responses. Specifically, Repair would not be associated with emotional responses after controlling by the level of intrusive thoughts.

In addition, we examined the relationship between PEI and two measures of interpersonal functioning: Empathy and Inhibition. With respect to Empathy, as a sixth hypothesis we predicted that Clarity and Repair would show positive relations with Perspective Taking, the most adaptive dimension of empathy; in contrast we predicted that Attention would be positively associated with Personal Distress, a less adaptive dimension of empathy. With respect to Inhibition, as a seventh hypothesis we predicted that individuals with higher Attention and Clarity would express their mood states more openly and often.

METHOD

Overview

In Session 1, participants came to the laboratory individually and watched a stressful slide and video presentation on sexual assault.

In Session 2, 48 hours later, participants returned to the lab and were re-exposed to the sexual assault video. In sessions 1 and 2, data were collected on psychological responses (emotional responses). In Session 2,

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participants completed questionnaires related to cognitive processing (intrusive thoughts).

Participants

We recruited women ($n = 144$) students of Psychology from the University of Malaga. Participants were compensated with course credit. The average age of the participants was 19.5 years old ($SD = 2.8$). We included only women in our study because we thought that the type of video chosen (a young woman suffering multiple rapes) would have a greater impact on this population group.

Procedure

Session 1. Upon arrival at the laboratory, participants were told that the study was designed to examine college students' reactions to sexual assault victims. Participants then completed a consent form. First, participants completed the TMMS. Next, participants were left alone throughout a 14-minute video scene depicting a gang rape in the movie *The Accused* (Kaplan, 1996). To assess emotional responses, participants then completed the Profile of Mood States (POMS).

Session 2. Participants first completed a questionnaire that measured the frequency with which they had intrusive thoughts about the sexual assault in the 2-day interim. Next, participants were exposed to the same video scene and then completed the POMS. At the end of Session 2, participants completed questionnaires of Empathy and Inhibition. Then the experimenter debriefed the participants.

Measures

Trait Meta-Mood Scale. The TMMS is a 48-item self-report measure designed to assess individuals' beliefs about attending to moods (Attention), the clarity of their own experiences of mood (Clarity), and their efforts to repair mood states (Repair; Salovey et al., 1995). The TMMS has been shown to have adequate internal consistency and good convergent and discriminant validity (Salovey et al., 1995). We used a Spanish adaptation, which has satisfactory psychometric properties (Fernandez-Berrocal, Alcaide, Domínguez, Fernandez-McNally, Ramos, & Ravira, 1998). All the following reliability rates belong to our study. The Attention subscale includes items such as, "One should never be guided by emotions" (alpha = .87). The Clarity subscale includes items such as, "I am usually confused about how I feel" (alpha = .81). The third subscale, Repair, reflects individuals' efforts to regulate their feelings. This subscale is characterised

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by items such as, "If I find myself getting angry, I try to calm myself down" (alpha = .76).

Emotional responses. We used the Profile of Mood States, Short Form (POMS-SF; Shacham, 1983) to examine the emotional responses after the video scene presentation on Day 1 and Day 2. The POMS is comprised of 6 subscales: Depression (i.e., sad, unfortunate; alpha = .83); Anger (i.e., suffering, furious; alpha = .88); Vigour (i.e., animated, active; alpha = .80); Fatigue (i.e., exhausted, tired; alpha = .78); Anxiety (i.e., tense, anxious; alpha = .84); and Confusion. We did not include the Confusion subscale, because the items did not appear to reflect mood as much as cognitive states. Items were rated on a 5-point scale (from 1 = *definitely no* to 5 = *definitely yes*). We used the Spanish version, which has satisfactory psychometric properties (Fernandez, Fernandez, & Pesqueira, 2000).

Intrusive thoughts. We used a 7-item scale to assess the frequency of intrusive thoughts about the video scene in the inter-session period. Seven items with high factor loadings were adapted from the Impact of Events Scale (Horowitz, Wilner, & Alvarez, 1979). The IES scale is applicable to any event, referred to as "it". In the present study, "it" was replaced by "the rape" (i.e., had thoughts about the rape or the rape images when you didn't mean to). All items were rated on a 6-point scale (from 0 = *not at all* to 5 = *very often*). In the present study, the Intrusive Thoughts scale had adequate reliability (alpha = .88).

Empathy. We used the Interpersonal Reactivity Index (IRI; Davis, 1980) to examine the empathy concept. The IRI assesses four components of Empathy: Perspective Taking (i.e., I sometimes try to understand my friends better by imagining how things look from their perspective; alpha = .70); Fantasy (i.e., When I watch a good movie, I can very easily identify with a leading character; alpha = .74); Empathic Concern (i.e., When I see someone being taken advantage of, I feel kind of protective towards them; alpha = .63); and Personal Distress (i.e., Being in a tense emotional situation scares me; alpha = .48). Items were rated on a 5-point scale (from 1 = *no, does not describe me very well* to 5 = *yes, does describe me very well*). We used the Spanish version of IRI with similar psychometric properties to the English version (Davis, 1980; Davis & Franzoi, 1991; Perez-Albeniz, de Paul, Etxebarria, Montes, & Torres, 2003).

Inhibition. We used the Lepore Inhibition of Emotions Scale (LIES; Lepore, 1994). It evaluates the difficulty of expressing and communicating emotional states openly (i.e., People would say I am an emotional person; alpha = .79). Items were rated on a 5-point scale (from 0 = *no, does not*

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describe me very well to 4 = *yes, does describe me very well*). For the current sample, the coefficient alpha reliability was .79.

RESULTS

Preliminary analyses

Table 1 shows the correlations of PEI with the various criterion variables. Results indicated a significant negative relation between Inhibition, Attention, and Clarity. On the other hand, Fantasy showed positive relations with Attention. However, Personal Distress showed negative relations with Clarity and Repair.

Empathy

We used a stepwise regression approach to determine the effects of Attention, Clarity, and Repair on Empathy (Fantasy, Empathic Concern, Perspective Taking, and Personal Distress). Higher levels of Attention ($\beta = .32$, $p < .001$) and of Repair ($\beta = .24$, $p < .05$) were associated with higher levels of Fantasy and Perspective Taking, respectively. The findings also revealed that higher Clarity ($\beta = -.48$, $p < .001$) and higher Attention ($\beta = .24$, $p < .01$) were associated with lower and higher levels of Personal Distress, respectively. Our study found no significant effects of PEI factors on Empathic Concern. These findings partially supported our sixth hypothesis because only Repair was associated with Perspective Taking.

Inhibition

We used a stepwise regression approach to determine the effects of Attention, Clarity, and Repair on Inhibition. Higher levels of both Clarity

TABLE 1
Pearson's correlations between PEI (Attention, Clarity, and Repair), Empathy (Fantasy, Perspective Taking, Empathic Concern, and Personal Distress) and Inhibition ($n = 144$)

	Attention	*Clarity*	*Repair*
Inhibition	−.42**	−.37**	−.09
Empathy	–	–	–
Fantasy	.32**	−.02	−.11
Perspective Taking	.11	.18	.24*
Empathic Concern	.08	.07	.09
Personal Distress	.08	−.40**	−.31**

*$p < .05$, two-tailed; **$p < .01$, two-tailed.

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($\beta = -.25$, $p < .01$) and Attention ($\beta = -.33$, $p < .01$) were associated with lower levels of Inhibition, supporting the seventh hypothesis.

Intrusive thoughts

A stepwise regression approach was used to determine whether PEI (Attention, Clarity, and Repair) had direct effects on the intrusive thoughts experienced during the two-day interim of the experiment. Higher levels of Repair ($\beta = -.23$, $p < .05$) were associated with lower levels of intrusive thoughts, supporting the third hypothesis. Neither Clarity ($\beta = .02$, $p > .05$) nor Attention ($\beta = .15$, $p > .05$) were significantly related to the level of intrusive thoughts.

Emotional responses to exposure to the sexual-assault stimuli

A stepwise regression approach was used to determine whether PEI (Attention, Clarity, and Repair) had direct effects on the emotional responses (POMS) on Day 1.

We only found significant effects of the Clarity factor on Depression and Fatigue. Higher levels of Clarity were associated with both lower levels of Depression ($\beta = -.28$, $p < .05$) and Fatigue ($\beta = -.21$, $p < .05$). These findings partially supported our first hypothesis because only the Clarity factor had influence on the emotional response.

Emotional responses to re-exposure to the sexual-assault stimuli

As shown in Table 2, there were significant differences between Day 1 and Day 2 on the emotional responses of depression, anger, and anxiety (POMS).

A stepwise regression approach was used to determine whether PEI (Attention, Clarity, and Repair) had direct effects on the emotional responses (POMS) on Day 2.

In the regression analyses, the dependent measure was a change in emotional responses (Day 2 – Day 1). Negative scores indicated lower emotional responses on Day 2 than on Day 1. We only found significant effects of Repair on Anger and Depression. Higher levels of Repair were associated with lower levels of both Anger (Anger on Day 2 – Anger on Day 1; $\beta = -.25$, $p < .01$) and Depression (Depression on Day 2 – Depression on Day 1; $\beta = -.21$, $p < .05$). These findings supported the second hypothesis.

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TABLE 2
Mean levels of the Profile of Mood States (POMS) on Day 1 and Day 2 ($n = 144$)

	Session			
Variable	*Day 1 Mean (SD)*	*Day 2 Mean (SD)*	*t*	*p-value (2-tailed)*
Depression	2.58 (0.77)	2.39 (0.82)	3.48	.001
Anger	3.16 (0.89)	2.96 (0.94)	3.03	.003
Vigour	4.14 (0.69)	4.21 (0.73)	−1.20	.23
Fatigue	2.08 (0.77)	2.16 (0.76)	−1.23	.22
Anxiety	3.24 (0.87)	2.93 (0.88)	4.32	.001

Note: $df = 143$. *SD* = standard deviation.

Mediation analyses

We used a multiple-regression approach to test the possibility that intrusive thoughts mediated the effects of Repair on the emotional response to the video scene. Likewise, we were interested in whether intrusive thoughts accounted for the differences in emotional responses over time.

Following the recommendations of Baron and Kenny (1986; also Kenny, Kashy, & Bolger, 1998), we used regression analyses to establish whether the following conditions for mediation were met: (a) the predictor (PEI) is associated with the outcome (change in emotional responses from Day 1 to Day 2); (b) the predictor is associated with the mediator (intrusive thoughts); (c) the mediator is associated with the outcome, controlled by the predictor; and (d) the predictor has zero association with the outcome after being controlled by the mediator. If all four steps were met, then the data would be consistent with the hypothesis that intrusive thoughts completely mediate the relation between Repair and changes in emotional responses. If just the first three steps were met, then data would be consistent with the hypothesis that intrusive thoughts partially mediate the effects of Repair on changes in emotional responses. We used the modified Sobel test (1982) discussed in Kenny et al. (1998) to evaluate the null hypothesis that the indirect effect of Repair on emotional responses via intrusive thoughts equals zero.

In the regression analyses, the dependent measure was a change in emotional response (Day 2 – Day 1). Lower scores indicated lower emotional responses on Day 2 than on Day 1. In order to carry out these analyses, we selected those variables on which Repair had a significant effect (Depression and Anger).

All criteria for mediation were satisfied in the regression analyses. First, Repair was associated with declines in Depression ($\beta = -.21$, $p < .05$). Second, Repair was associated with a lower level of Intrusive Thoughts ($\beta = -.23$, $p < .05$). Third, independent of the effect of Repair, the level of

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intrusive thoughts was associated with higher Depression ($\beta = .27$, $p < .01$), supporting the fourth hypothesis. Finally, after being controlled by the level of intrusive thoughts, Repair was no longer associated with changes in Depression ($\beta = -.10$, $p > .05$). The modified Sobel test revealed that the reduction in Depression due to lower intrusive thoughts in Repair was significant ($Z = 1.96$, $p < .05$). These results are consistent with the fifth hypothesis that intrusive thoughts fully mediate the effects of Repair on declines in Depression (see Figure 1).

With respect to Anger, all criteria for mediation were satisfied in the regression analyses. First, Repair was associated with declines in Anger ($\beta = -.25$, $p < .01$). Second, Repair was associated with a lower level of intrusive thoughts ($\beta = -.23$, $p < .05$). Third, independent of the effect of Repair, level of intrusive thoughts was associated with higher Anger ($\beta = .29$, $p < .01$), supporting the fourth hypothesis. Finally, after being controlled by the level of intrusive thoughts, Repair was no longer associated with changes in Anger ($\beta = -.17$, $p > .05$). The modified Sobel test revealed that the reduction in Anger due to lower intrusive thoughts in Repair was significant ($Z = 1.99$, $p < .05$). These results are consistent with the fifth hypothesis intrusive thoughts fully mediate the effects of Repair on declines in Anger (see Figure 2).

DISCUSSION

PEI and Empathy

In the present study we found differential effects of TMMS factors on the dimensions of Empathy, in agreement with previous research and extending their results (Schutte et al., 2001). Individuals with high Attention became

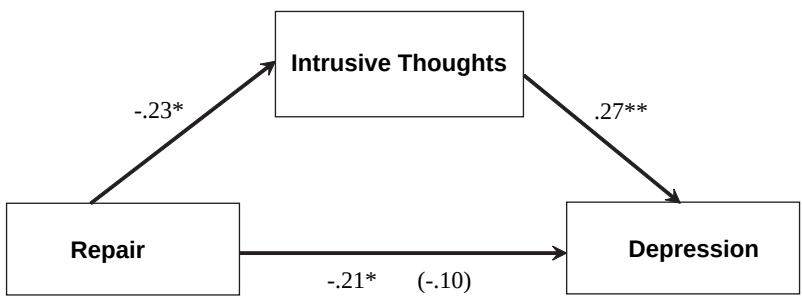

Figure 1. Standardised regression coefficients for the relationship between Repair and Depression as mediated by intrusive thoughts. The standardised regression coefficients between Repair and Depression controlling for intrusive thoughts is in parentheses. *Note*: *$p < .05$, **$p < .01$.

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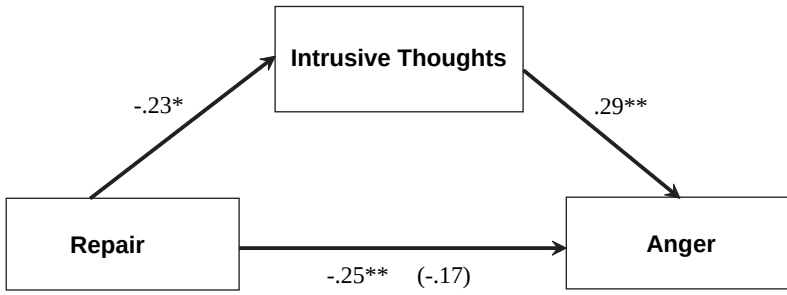

Figure 2. Standardised regression coefficients for the relationship between Repair and Anger as mediated by intrusive thoughts. The standardised regression coefficients between Repair and Anger controlling for intrusive thoughts is in parentheses. *Note*: $*p < .05$, $**p < .01$.

involved in the feelings of characters in books and films (Fantasy) and experienced a greater unease towards other people's suffering (Personal Distress). Clarity played a different role. Individuals with high Clarity experienced less unease towards other people's suffering (Personal Distress). One possible explanation is that this was not due to a lack of interest in others, but to a greater understanding of one's and other people's emotions. This explanation is supported by the fact that individuals with high Clarity were also better at perceiving the reasons why other people experience negative mood states (Perspective Taking). Understanding the reasons for emotional distress is a first step to diminish that distress. Thus, individuals with high Repair better understood other people's points of view (Perspective Taking) moving away from their emotional states and taking other perspectives.

PEI and Inhibition

As we hypothesised, individuals with high Attention and Clarity proved to be less inhibited, consistent with previous studies (Davies et al., 1998). In this case, focusing on emotional states as well as discriminating between them might help individuals to express their emotions openly.

PEI and adaptation to an acute stressor

On the first day of their exposure to the video, and therefore before intrusive thoughts could mediate, people with high Clarity reported experiencing less Fatigue and Depression after watching the video. However, on the second day, we noted how individuals with high Repair showed less Depression and Anger. Particularly interesting was the fact that on Day 1 of the study, the

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most relevant factor when it came to explaining emotional adjustment was Clarity, whereas on Day 2 it was Repair that played a determining role. Individuals who are able to discriminate and understand mood states at the same time as they face a stressful stimulus can benefit from this skill; therefore, Clarity works first, on a preventive level. On the other hand, Repair needs the arousal of negative mood; consequently it acts in second place, as a palliative. Thus, individuals who are clear about their moods might experience less emotional impact. This, in turn, could enable them to start active coping strategies, which could lead them to the adaptation to the event; which is supported by the decrease of intrusive thoughts associated with the stressor, in agreement with findings from Salovey et al. (1995).

We predicted that Repair could have an effect on the adaptation to an acute stressor in two different ways: directly on emotional responses to a stressful event, and indirectly via intrusive thoughts associated with the negative event. Regarding the relationship between Repair, intrusive thoughts, and emotional responses, our results indicated the role of intrusive thoughts as a mediator in acute stress situations, showing that intrusive thoughts comprise a decisive variable in order to understand adaptation to stressful situations. Participants with high Repair reduced emotional responses of Depression and Anger after the re-exposition to the video, enabling cognitive resolution. Concurrently, they experience fewer intrusions, which make the adjustment to the experience easier. Nolen Hoeksema's model applied to our study predicts that the intrusive thoughts will thoroughly mediate the effects of Repair on the emotional response on Day 2 of our study. The influence of Repair on emotional adjustment should disappear after controlling the effects of the intrusive thoughts experienced, and this is exactly what happened in our study (Nolen-Hoeksema, 2001).

Limitations and future research

The present research has several limitations. First, the type of stressor employed must be considered. The emotional impact induced by a video in the laboratory cannot compare to situations involving emotionally significant stressors. Second, investigating with women only, despite its justification, gave way to doubts concerning the possible generalisation of these outcomes.

Future research might also examine how individuals with higher EI employ active coping strategies (e.g., distractions, appraisal of experience) more than passive or avoiding strategies (e.g., thought suppression), which will foster adaptation to the experience.

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Summary

In conclusion, the findings from this study provided evidence that individuals with higher emotional Clarity and Repair experience less unease after being exposed to an acute stressor, which could enable them to cope with and adapt to the event adequately. Cognitive adjustment leads to a smaller number of intrusive thoughts, which, in turn, facilitates emotional adaptation to the experience.

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