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Trait Emotional Intelligence Is Related to Risk-Taking Through Negative Mood and Anticipated Fear

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Abstract

Existing research showed that negative mood and the fear of bad outcomes led people to prefer risk-averse tendencies, and this effect has often been implicitly considered as a universal phenomenon. Nevertheless, interactionist accounts emphasized the importance of both person and situation in predicting outcomes. We aimed to prove whether trait Emotional Intelligence (EI, a person’s characteristic) was related to risk-taking through environmental factors naturally occurring in decision-making processes (i.e., negative mood and anticipated fear). One hundred and fifty-eight participants completed the PANAS, the anticipated fear ratings and the hot-CCT (a risk-taking measure), one month following assessment of trait EI. Results showed that negative mood and anticipated fear were two simultaneous mediators of the relationship between trait EI and risk-taking.
More than two decades of research have shed light on the relationships between emotion, mood and risk-taking, raising a line of research referred to as Emotions revolution (see Weber & Johnson, 2009).

Existing research (Chou, Lee, & Ho, 2007; Drichoutis & Nayga, 2013; Yuen & Lee, 2003) has demonstrated that individuals in experimentally induced negative mood show a lower willingness to take risk than those who are in either neutral or elated moods. One of the most prominent models in this line of research is the Affect Infusion Model (AIM), which suggests that negative mood leads to decreased risk-taking because people in negative mood are inclined to perceive the world as a threatening place. Thus, they are more likely to process information carefully in order to avoid potential bad outcomes (see Forgas, 1995; Forgas & George, 2001; Harlé, Chang, van't Wout, & Sanfey, 2012).

In this vein, Lerner and Keltner (2001) showed that “fearful people expressed pessimistic risk estimates and risk-averse choices” (Lerner & Keltner, 2001, p. 146). Based on a representative national American sample, the authors demonstrated that fear increases risk estimates. This effect was found with both experimentally induced and naturally occurring fear (Lerner, Gonzalez, Small, & Fischhoff, 2003). Taken together, these results provided empirical evidence of a relationship between fear and risk-taking (Lerner & Keltner, 2001; Lerner et al., 2003). Some relevant distinctions between mood and emotion should be made. An individual’s mood represents a pervasive and diffuse emotional state, which may give rise to broad action tendencies such as approach or avoidance. Moreover, people’s mood is unrelated to specific situations (see Beedie, Terry, & Lane, 1995). By contrast, emotion represents a fluctuating state, which is limited to a specific situation. Accordingly, emotions give rise to behavioral response tendencies relevant to these objects (Beedie et al., 1995; Gross, 1998). Several researchers have supported a hierarchical model that integrates emotion and mood (Diener, Smith, & Fujita, 1995; Watson & Clark, 1992).
This model points out that specific emotions are lower-order elements within higher-order positive and negative mood categories (Gross, 1998).

Concerning decision science, Zeelenberg and colleagues highlighted the importance of investigating both mood and emotion because both provide distinct information on decision-making processes (Zeelenberg, Nelissen, Breugelmans, & Pieters, 2008). These authors argued that separating mood from emotion may foster novel insights into human behavior under conditions of risk. In our current research, we are interested in investigating the relationships between negative mood, anticipated fear and risk-taking. Loewenstein and Lerner (2003) viewed anticipated emotions as a component of the expected consequences of a decision. For example, when a decision maker considers potential choice outcomes he/she generates anticipated emotions (Mellers, Schwartz, Ho, & Ritov, 1997). Mellers and colleagues' (2001) pioneering research showed that “people who overestimate the displeasure of unfavorable outcomes would tend to be overly risk averse” (Mellers & McGraw, 2001, p. 213). In other words, the anticipated fear that bad outcomes may materialize leads people to prefer risk-averse options (Mellers, 2000). Based on these results, decision-making research points to a strong link between anticipated emotion and risk-taking (see Loewenstein, Weber, Hsee, & Welch, 2001, for a systematic review) yet, little is known about the role of personality factors within this relationship.

Multiple theoretical accounts suggested that individual differences play a role in regulating moods and emotions triggered during decision-making processes (e.g., Appelt, Milch, Handgraaf, & Weber, 2011; Panno, Lauriola, & Figner, 2013). These accounts emphasized that human behavior is always the result of a combination of individual differences and situational factors (e.g., Appelt et al., 2011; Mischel & Shoda, 1995). Thus, the idea behind the current study is that a construct which “lies at the lower levels of personality hierarchies” (Petrides, Pita, & Kokkinaki, 2007, p. 283), such as trait Emotional Intelligence (trait EI; Petrides & Furnham, 2001) is likely to influence risk-taking via naturally occurring negative mood and anticipated fear.
A number of studies point out that trait EI provides an array of benefits across various domains, such as academic achievement, functional attitudes, job performance, career success and mood management behavior, as well as decision making (Ciarrochi, Chan, & Bajgar, 2001; Elfenbein, Foo, White, Tan, & Aik, 2007; Goleman, 1995; Petrides, Frederickson, & Furnham, 2004; Sevdalis, Petrides, & Harvey, 2007). Research on trait EI has its roots in Gardner’s (1983) work on multiple intelligences. According to Gardner (1999), the trait EI can be split into: i) interpersonal intelligence denoting people’s capacity to understand the intentions, motivations, and desires of others, and consequently to work effectively with them; and ii) intrapersonal intelligence which refers to the capacity to understand oneself and have an effective working model of one’s own desires, fears, and capacities, and which allows people to use such information effectively in regulating their own behavior (Gardner, 1999; Petrides et al., 2007).

Relevant to our study, trait EI represents a key personality factor in understanding how an emotionally-intelligent decision maker takes risks because greater trait EI allows people to recognize moods and emotions, which may interfere with rational choice, and accordingly decreases their sensitivity to these factors. Specifically, an emotionally-intelligent decision maker recognizes negative mood and anticipated fear triggered by risky situations, and consequently takes into account such elements during decision-making processes (e.g., Ciarrochi et al., 2001; Petrides & Furnham, 2003; Sevdalis et al., 2007). Consistent with this view, information-processing theories have pointed out that an emotional state is used as information when one is deciding to act (e.g., Evans, 2008). In other words, individuals’ ability to appraise an emotional state enables to elaborate the potential behavioral outcome.

Social and personality research has shown a relationship between trait EI and negative mood (e.g., Ciarrochi et al., 2001; Petrides & Furnham, 2003; Sevdalis et al., 2007). Specifically, individuals higher in trait EI are more skillful in recognizing the source which triggers negative mood or emotion, and thus show more efficient mood management behavior. Decision-making research has shown an effect of negative mood, as well as fear, on risk perception and risk-taking
(e.g., Lerner & Keltner, 2001; Yuen & Lee, 2003). Thus, combining trait EI research with decision science, we predicted that trait EI is related to risk-taking through both negative mood and anticipated fear because it decreases individuals’ sensitivity to such factors. We did not expect a mediating effect for positive mood because previous studies have shown that successful emotion-regulation strategies (e.g., cognitive reappraisal) on risk-taking are specific to negative aspects rather than positive aspects of a risky situation (Panno et al., 2013; Sokol-Hessner et al., 2009; Sokol-Hessner, Camerer, & Phelps, 2012).

**METHOD**

**Participants**

Participants were 158 undergraduate students of the University of Florence (76% women; \( M_{\text{age}} = 21.64, SD = 3.17 \)), who were recruited through the general subject pool for psychological courses. For their participation they received credit toward a course requirement. In the present study, we determined the sample size based on a recent meta-analysis investigating the individuals' performance in taking risk using behavioral measures (see Lauriola, Panno, Levin, & Lejuez, 2014).

**Measures**

*Trait Emotional Intelligence Questionnaire-Short Form–TEIQue-SF*

Trait EI was assessed using the TEIQue-SF (Petrides & Furnham, 2004), a measure of global trait EI. Sample items include “I often pause and think about my feelings”. Participants responded on a 7-point Likert scale, ranging from 1 ‘completely disagree’ to 7 ‘completely agree’. (Internal consistency, \( \alpha = .85 \)). Higher scores indicated greater trait EI.

*Positive and Negative Affect Schedule–PANAS*

The Positive and Negative Affect Schedule was used to assess participants' mood states before the risk task. Participants filled out the PANAS following the original instruction of this scale (Watson, Clark, & Tellegen, 1988). We observed internal consistencies of .86 and .83 for positive and negative mood, respectively. All analyses were based on these continuous measures where higher scores indicated greater positive, as well as negative, mood. It is worth noting that the
PANAS instructions did not refer to risk-taking task and participants filled out this measure before reading the instructions of the risk task. Thus, we can rule out that participants’ negative mood reflected the measure of anticipated fear as they were not aware of the risk task when completing the PANAS.

**Anticipated fear**

Anticipated fear was assessed using a 7-point Likert scale with the response anchored at the ends with 1 (*Strongly disagree*) and 7 (*Strongly agree*) *(The fear of turning over a losing card will lead me to stop the game round)* (see Nordgren, van der Pligt, & van Harreveld, 2007, for similar procedure).

**Hot Columbia Card Task–CCT**

Risk-taking was assessed using the “hot” version of the Columbia Card Task (hot-CCT), a 24-trial computer-based measure showing 32 cards face down and a score of 0 points for each game round (Figner & Weber, 2011). Participants accumulate point by clicking on one card after another until they either decide to stop or they turn over a loss card, which leads to a loss of all accumulated points and automatically ends the current round in the game. In other words, if participants turn over a loss card, the current round stops and they lose all points collected during this round. Turning over more cards indicates greater potential reward, but also greater risk. Accordingly, the indicator of risk-taking is the average number of cards chosen per trial with higher scores indicating greater risk-taking (Figner, Mackinlay, Wilkening, & Weber, 2009). Participants did not receive a payout.

**Procedure**

We scheduled participants for two separate sessions. At the first session participants completed the trait EI measure. At the second session—one month later—they completed the PANAS questionnaire and the anticipated fear measure before playing the hot-CCT.

This general procedure ensured a conservative test of our hypotheses and obscured to participants that we were interested in how trait EI (measured in the first session) predicted the
extent to which they took risk in the second session (see Panno, Pierro, & Lauriola, 2014, for similar procedure).

**RESULTS**

To investigate our hypotheses of the relationships between trait EI, negative mood, anticipated fear and risk-taking, we computed a series of Pearson correlations. As shown in Table 1, trait EI was negatively correlated with both negative mood and anticipated fear. The present study also found that negative mood and anticipated fear were both negatively correlated with risk-taking. The negative mood subscale was not significantly related to anticipated fear ($p > .10$). Thus, we can rule out that these two constructs overlap. There was no a significant correlation between trait EI and risk-taking ($p > .10$).

To test our meditational hypotheses concerning the relationship between trait EI and risk-taking, we used the PROCESS macro for SPSS (Hayes, 2013), which simultaneously tested the role of both negative mood and anticipated fear as mediators. A bootstrapping procedure (with 5,000 bootstrap samples) to estimate 95% bias-corrected confidence intervals was used (bias-corrected; BC 95% CI). A BC 95% CI that does not include zero provides evidence of a significant indirect effect (MacKinnon, Krull, & Lockwood, 2000; Preacher & Hayes, 2008). As shown in Figure 1, the model provided estimates of the total, direct, and indirect effects of the trait EI on risk-taking through both negative mood and anticipated fear. Mediating analyses revealed significant indirect effects of the trait EI on risk-taking through negative mood (point estimate = 0.005, BC 95% CI = 0.001 to 0.011) and anticipated fear (point estimate = 0.006, BC 95% CI = 0.001 to 0.014) (see Figure 1).
Since the measure of negative mood might overlap with the measure of anticipated fear, we thus included in the mediating analysis a composite score of the negative mood, which did not include two PANAS items assessing feelings of fear (i.e., scared and afraid). Again, we found that the trait EI was related to risk-taking through negative mood (point estimate = 0.006, BC 95% CI = 0.001 to 0.014) and anticipated fear (point estimate = 0.008, BC 95% CI = 0.001 to 0.018).

To shed further light on whether the PANAS items (i.e., scared and afraid) showed a relationship among the variables investigated, we tested a model which included these two combined PANAS items and anticipated fear as simultaneous mediators. We still found a significant indirect effect of trait EI on risk-taking through anticipated fear (point estimate = 0.008, BC 95% CI = 0.001 to 0.018), but no significant indirect effects of this relationship through scared and afraid emerged (scared point estimate = 0.001, BC 95% CI = -0.001 to 0.007; afraid point estimate = 0.001, BC 95% CI = -0.002 to 0.006).

To test whether positive mood played a mediating role in our model, it was added as third mediator to the original mediation model. Consistent with previous investigations (Panno et al., 2013; Sokol-Hessner et al., 2009; Sokol-Hessner et al., 2012), positive mood did not show a mediating effect between trait EI and risk-taking (point estimate = 0.002, BC 95% CI = -0.003 to 0.009). The indirect effects of trait EI on risk-taking through negative mood and anticipated fear did not change. We further investigated whether our mediating model was affected by the addition of covariates, such as participants' gender and age, but the relationships among trait EI, negative mood, anticipated fear, and risk-taking did not substantially change. None of the covariates was significant (all \( p \)'s > .10).

Since trait EI, negative mood and anticipated fear are measures referring to emotional dimensions and all of these were measured before the risk-taking task, we examined two alternative models by reordering the variables. First, we included the negative mood as the independent variable, trait EI and anticipated fear as mediators, and risk-taking as the dependent variable. No evidence for significant mediation emerged (trait EI point estimate = 0.003, BC 95% CI = -0.017 to
0.027; anticipated fear point estimate = -0.001, BC 95% CI = -0.050 to 0.038). Second, we tested a model including the anticipated fear as the independent variable, trait EI and negative mood as mediators, and risk-taking as the dependent variable. Again, no evidence for significant mediation emerged (trait EI point estimate = 0.006, BC 95% CI = -0.030 to 0.056; anticipated fear point estimate = -0.001, BC 95% CI = -0.058 to 0.066).

**DISCUSSION**

This study demonstrates that people’s trait EI is indirectly related to risk-taking via naturally occurring negative mood and anticipated fear. In comparison to earlier studies (e.g., Heilman, Crişan, Houser, Miclea, & Miu, 2010; Li, Sang, & Zhang, 2015; Panno et al., 2013; Sevdalis et al., 2007; Sokol-Hessner et al., 2012), this study is the first to show a relationship between trait EI and risk-taking through negative mood and anticipated fear. Moreover, these results extend previous research (Heilman et al., 2010; Li et al., 2015; Panno et al., 2013) as they point out that, not only some specific emotion-regulation strategies (e.g., emotional suppression, Li et al., 2015) are related to risk-taking tendency, but also an enduring personality trait (i.e., trait EI) is related to such a tendency. Although the emotion regulation plays a part in the global construct of trait EI, this person-based factor represents a higher-order personality trait including interpersonal (e.g., social awareness) as well as intrapersonal dimensions (e.g., emotion regulation) (Petrides et al., 2007).

Existing research (Heilman et al., 2010; Panno et al., 2013; Sokol-Hessner et al., 2009; Sokol-Hessner et al., 2012) has demonstrated that the effect of the cognitive reappraisal emotion-regulation strategy on risk-taking is specific to negative aspects of a risk situation. Our findings extend these results by showing that global trait EI–beyond cognitive reappraisal strategy–is related to risk-taking through negative mood rather than positive mood.

In accordance with some theoretical accounts (Appelt et al., 2011; Mischel & Shoda, 1995), our mediation model points out a mechanism explaining how trait EI (i.e., a person’s characteristic) is related to risk-taking. Broadly speaking, one can argue that the emotionally-intelligent decision
makers are more likely to succeed in taking their negative mood and anticipated fear into account when making their decisions. The overarching message of our work is that people who are higher in EI show dampened effects of negative mood and anticipated fear on risk-taking. This represents a novel insight, as the effect of the negative mood and anticipated fear on risk-taking is typically considered a universal phenomenon.

From a different line of research (Ekman, 1999), we know that the response to fear may have an overall evolutionarily adaptive value. Nevertheless, some situations which involve higher-order cognition such as decision making may be compromised by relying on impulsive processes in response to fear. Thus, the current study points out that people's trait EI is a relevant person-based factor which regulates emotional arousal triggered by anticipated fear.

Some limitations of the present study need to be acknowledged. First, a number of studies have shown that different discrete emotions such as anger, regret, and disappointment are related to risk-taking (e.g., Lerner & Keltner, 2001; Loewenstein et al., 2001; Mellers et al., 1997). As it was beyond the scope of the current study to investigate all of these, we cannot rule out that some of these emotions may further mediate the relationship between trait EI and risk-taking. Nevertheless, based on our results, future research might investigate whether trait EI influences risk-taking through different types of emotions triggering different levels of emotional arousal.

Second, one might suppose that negative mood or anticipated fear could show a positive effect on risk-taking in some specific situations. For instance, the Mood Maintenance Hypothesis (MMH; Isen & Patrick, 1983), in contrast to AIM (Affect Infusion Model, Forgas, 1995), supports the idea that people in negative mood make riskier choices to obtain greater potential rewards in the hope of repairing their negative mood. Nevertheless, Forgas (1995) suggests that the MMH model might only apply when there is strong motivation to achieve a particular outcome and the risk-taking task does not demand cognitive effort; for example, when participants are paid based on their performance) or when the task is simple or well-learned. Because we did not pay participants for their performance on the risk-taking task and this task demanded cognitive effort because it was
new to research participants; we expected that the AIM would provide accurate predictions in our paradigm. Future studies could investigate these relationships using an incentive-compatible paradigm.

Recent empirical evidence (Miu & Crisan, 2011) has shown that situationally induced cognitive reappraisal reduces susceptibility to framing effects by regulating the emotions associated with the decision frames. Therefore, one can expect that trait EI represents a stable person factor which reduces the susceptibility to framing effects. Such a finding would extend previous research which focused only on situationally induced emotion-regulation strategies. Some authors (e.g., Nelis, Quoidbach, Mikolajczak, & Hansenne, 2009) have shown that EI can be improved. Thus, studies on how to enhance EI are needed because the same psychological interventions should improve decision strategies. Empirical evidence has shown that situationally induced cognitive depletion may lead to greater reward-seeking, thus exacerbating unhealthy habits (e.g., Giacomantonio, Jordan, Fennis, & Panno, 2014). Investigations aimed at shedding light on decisional processes related to unhealthy behaviors might reveal that trait EI reduces people’s reward-seeking tendency when depletion occurs. Put differently, further studies may show that trait EI is a key factor in moderating the effect of the depletion on reward-seeking because it likely enhances individuals’ resistance to temptation.

Since the trait EI and risk-taking are topics with great relevance to social psychology and decision science, the current study may represent the first step in a fruitful avenue of research. Future investigations relating decision maker's trait EI to emotions in decision making may provide novel insights into human behavior under conditions of risk.
Footnotes

¹Hayes and other authors (e.g., MacKinnon et al., 2000) recommend that “researchers not require a significant total effect before proceeding with tests of indirect effects. A failure to test for indirect effects in the absence of a total effect can lead to you miss some potentially interesting, important, or useful mechanisms by which X exert some kind of effect on Y” (Hayes, 2009, p. 414).
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Emotional Intelligence and Risk-Taking


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Table 1. Means, Standard Deviations and Intercorrelations between Trait EI, Negative Mood, Positive Mood, Anticipated Fear and Risk-Taking.

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<td>.01</td>
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<td>-.20*</td>
<td>.05</td>
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<td>M (SD)</td>
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<td>1.30 (0.39)</td>
<td>3.23 (0.60)</td>
<td>3.87 (1.65)</td>
<td>7.19 (2.29)</td>
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*p < .05; **p < .001.
Figure 1. Mediating model, which shows the effect of people's trait EI on risk-taking through negative mood and anticipated fear. NOTE: Path values represent standardized regression coefficients. The (c') value represents the effect, from bootstrapping analyses, of the trait EI on risk-taking after the mediators are included. Dotted line (c) represents the effect of the trait EI on risk-taking prior to the inclusion of the mediating variables. *p < .05; **p < .01; ***p < .001.