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Emotional intelligence, cognitive ability and information search in tactical decision-making



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ABSTRACT

Emotional intelligence (EI) may promote more effective decision-making under stress. In the present study, 167 participants completed a situation judgment test for EI, and performed a decision-making task based on an Antarctic rescue scenario. Participants were assigned to either a negative or neutral feedback group. Negative feedback significantly increased distress and impaired decision-making. EI failed to moderate the impacts of negative feedback, but higher EI was associated with greater information-search activity irrespective of feedback condition. It is concluded that ability EI may have a motivational component that may support more exhaustive analysis of both social and non-social stimuli.

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1. Introduction

Stress and negative emotions impair decision-making in operational contexts (Driskell & Salas, 1996). In this article, we explore the potential role of emotional intelligence (EI) in supporting effective decision-making under stress. If EI is associated with more effective coping (Mikolajczak & Luminet, 2008; Zeidner, Matthews, & Roberts, 2012), the emotionally intelligent decision-maker may resist adverse effects of negative affect.

Both decision-making and EI are multi-faceted, sometimes loosely-defined constructs. We will discriminate some different aspects of decision-making, and consider how they might be associated with ability and 'trait' factors for EI. Cognitive components of decision-making include information acquisition and evaluation, retrieval from memory and response selection. The present study focuses primarily on information search within a complex visual environment. Real-life decisions such as purchasing major consumer goods often require extensive search to obtain information about alternative options. Premature termination of search may lead to neglect of relevant information (Browne & Pitts, 2004).

Two previous studies (Kustubayeva, Matthews, & Panganiban, 2012; Matthews, Panganiban, & Hudlicka, 2011) investigated the sensitivity of information search to affect. Participants searched map displays for information to determine which of several routes would provide the fastest path to rescue a party of lost Antarctic explorers. Each route had both potential benefits and risks, indicated on the map by icons. Information search was measured as the frequencies with which the icons were sampled. The paradigm distinguishes two types of affective influence. Affective bias refers to whether the person preferentially samples potential benefits or risks; selective attention research suggests that such bias should be congruent with the person's mood (Matthews et al., 2011). Search activity refers to the effort allocated to the search, indexed as the total number of icons sampled prior to decision.

Matthews et al. (2011) found that, consistent with prior research, trait anxiety was associated with a bias towards sampling risk information. However, contrary to expectation, an experimental induction of anxiety weakened anxiety bias, suggesting that bias was dependent on the general affective context. Kustubayeva et al. (2012) confirmed that relationships between bias and positive and negative affect varied with context. Negative affect appeared to promote information search for benefits only when the person was generally succeeding on the task. Positive affect was associated with search activity for benefits in adverse conditions

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characterized by negative feedback. [Martin's \(2001\)](#) mood-as-input theory may explain the impact of affect on search. According to this theory, moods have motivational effects that depend entirely on how the mood is interpreted within the current context. In relation to information search, [Kustubayeva et al. \(2012\)](#) proposed that in adverse conditions, negative emotions are interpreted as a sign that the task is too difficult, reducing task motivation. Conversely, positive affect represents a spirit of courage in adversity that motivates continued search for a way out of the current predicament.

The mood-as-input theory suggests a more nuanced view of the role of EI, beyond some broad association between EI and effective coping. [Epstein \(1998\)](#) suggested that constructive thinking was the key to EI, where constructive thinking refers to styles of pre-conscious thought that promote contextualized understanding of problems, mood-regulation, and effective action. Individual differences in constructive thinking may shape the interpretations of mood in the decision-making context that determine whether negative emotions are used as a motivator to drive determined effort, or shape a sense of resignation and apathy. In turn, EI may influence how constructively the decision-maker thinks about stressful contexts. Of course, constructive thinking might also mitigate the impact of stressors on negative emotions ([Zeidner et al., 2012](#)), so that high EI might both attenuate negative emotional response, and limit its adverse impacts on decision-making.

Constructs labeled as 'emotional intelligence' are multifarious and often poorly correlated ([Matthews, Zeidner, & Roberts, 2004](#)). The most prevalent measurement fissure divides ability tests, presumed to have correct answers, from questionnaire assessments resembling personality inventories ([Roberts, MacCann, Matthews, & Zeidner, 2010](#)). Trait EI models ([Petrides, Pérez-González, & Furnham, 2007](#)) claim that questionnaires may be used to assess personality dimensions that support affective functioning. Ability and trait assessments each cover a variety of instruments, and so choice within each domain is important also.

The ability tests of [Mayer, Salovey, and Caruso \(2012\)](#) are the best known. However, these tests are largely devoid of the contextual information that shapes people's appraisals of emotion and choices of action ([Matthews et al., 2004](#)). This decontextualization is a limitation if we are interested in how people use emotional context to motivate information search. An alternative approach that refers explicitly to context is to use Situation Judgment Tests (SJTs). These present respondents with emotive scenarios, and they must choose the most appropriate response from a list of possible choices ([Roberts et al., 2010](#)). SJTs may be especially well-suited to measuring social-emotional skills supporting judgment and decision-making. A recent development is the Situational Judgment Test of Emotional Abilities (SJTEA), which uses multi-media to present various emotionally laden scenarios. [Roberts et al. \(2013\)](#) reported three studies which found that the SJTEA had acceptable reliability and stability, and meaningful positive relationships with the [Mayer et al. \(2012\)](#) EI test, cognitive abilities, well-being, socio-emotional outcomes, academic success and transformational leadership.

Trait EI measures may be broadly divided into those measuring some general factor, often as the apex of a pyramid of subfactors (e.g., [Petrides et al., 2007](#)), and those targeted towards more narrowly defined personal characteristics. A limitation of general scales is their overlap with broad personality traits such as emotional stability and extraversion ([Zeidner et al., 2012](#)). An alternative trait scale linked to stress vulnerability is the Trait Meta-Mood Scale (TMMS: [Salovey, Mayer, Goldman, Turvey, & Palfai, 1995](#)), which is claimed to measure competencies in mood-regulation. [Matthews and Fellner \(2012\)](#) pooled data from several studies (total $N = 608$) and found that TMMS scales predicted lower levels of stress during performance. Clarity of thinking about mood

predicted stress over and above broad personality factors, although incremental validity was modest.

In this study, we aimed to test whether EI moderated the impact of an experimental manipulation of stress on information-search and decisional choice. We used [Kustubayeva et al.'s \(2012\)](#) tactical decision-making task, with two conditions: neutral and negative feedback. The task affords participants the choice of two routes. In the negative feedback condition, participants were informed whether their route choice led to a loss or gain in time, relative to their schedule for reaching the lost explorers before they perished. Feedback was manipulated to provide mostly negative outcomes. [Kustubayeva et al. \(2012\)](#) found that negative feedback was effective in elevating negative mood, as well as anxiety, anger and depression. Subjective states were assessed using the Dundee Stress State Questionnaire (DSSQ: [Matthews et al., 2002](#); [Matthews, Szalma, Panganiban, Neubauer, & Warm, 2013](#)), which measures distress, task engagement and worry. It was expected (H1) that the manipulation would increase subjective distress.

We hypothesized that the SJTEA would be associated with a reduced distress response to the feedback manipulation, as well as higher task engagement, because EI should be associated with more constructive appraisals (H2). The SJTEA should also correlate with greater information search activity, especially in the negative feedback condition, because EI relates to more constructive processing of personal stress symptoms, e.g., interpreting them as motivators (H3). If information search supports more accurate decision, the SJTEA should also be associated with greater accuracy, i.e., determining the faster route (H4).

We also had several subsidiary goals. To check the persistence of stress response, following the initial failure experience, participants performed in two successive phases, with no feedback in the second phase. More emotionally intelligent individuals should be less vulnerable to carry-over of stress to the second phase, so that the hypotheses should be supported in both phases. Task stimuli provide numerical information about the likelihood and severity of gains and costs in time, so that cognitive ability may also moderate stress response. We included a marker for fluid intelligence ([Roberts et al., 2000](#)) to compare the impact of EI with this ability. We also included the TMMS ([Salovey et al., 1995](#)) to test whether mood-regulation traits influenced stress and performance. If high TMMS scores are associated with more constructive appraisals of stress, predictions similar to those for the SJTEA may be derived.

2. Method

2.1. Participants

One hundred and sixty-seven participants (110 women, 57 men, $M_{\text{age}} = 19.9$ years, age range: 18–33 years) were recruited from the Introductory Psychology Pool at the University of Cincinnati. They received course credit for participation.

2.2. Materials

2.2.1. Questionnaire

The 30-item Trait Meta-Mood Scale (TMMS: [Salovey et al., 1995](#)) assessed attention (e.g., frequent thought about emotions), clarity (e.g., understanding one's emotions), and mood-repair (e.g., positive thinking when unhappy).

2.2.2. Cognitive ability

The Letter Sets task ([Ekstrom, French, Harmon, & Derman, 1976](#)) was used to assess fluid ability. Participants were given a series of 15 five four-letter sets. All but one set followed a

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