Personality and Individual Differences 102 (2016) 118–122

Contents lists available at ScienceDirect

Personality and Individual Differences

journal homepage: www.elsevier.com/locate/paid

Openness and other Big Five traits in relation to dispositional mixed emotions

Kate A. Barford *, Luke D. Smillie

The University of Melbourne, Australia

ARTICLE INFO

Article history:
Received 8 April 2016
Received in revised form 30 June 2016
Accepted 1 July 2016
Available online 6 July 2016

Keywords:
Mixed emotions
Big five
Openness
Extraversion
Neuroticism

ABSTRACT

Despite accumulating evidence for concurrent feelings of positivity and negativity (e.g., simultaneous happiness and sadness), little is known about individual differences in these *mixed emotions* experiences. We examined relations between a novel measure of dispositional mixed emotions (the *Trait Mixed Emotions Scale*; TMES) and the Big Five trait domains and aspects. We derived two a-priori predictions: (1) Openness/Intellect—reflecting cognitive flexibility and exploration—would predict the TMES, and (2) Extraversion and Neuroticism—reflecting susceptibility to positive and negative emotions, respectively—would jointly predict the TMES. Results showed that two measures of the Openness aspect of Openness/Intellect positively predicted TMES scores. Extraversion and Neuroticism did not jointly predict the TMES. Neuroticism positively predicted the TMES, but this reflected the relation of Neuroticism with dispositional *negative* emotions. The Volatility aspect of Neuroticism, however, was a positive predictor of the TMES beyond its relation with trait negativity. Our findings inform further study of differential mixed emotions experiences, and may help consolidate the previous fragmented literature in this area.

1. Introduction

Mixed emotions are concurrent experiences of positive and negative valence (Larsen & McGraw, 2014)[1], such as the simultaneous happiness and sadness one might experience on *bittersweet* occasions like graduation day (Larsen, McGraw, & Cacioppo, 2001). Mixed emotions research has largely focussed on verifying that opposite valences (i.e., *positivity* and *negativity*; Cacioppo & Berntson, 1994) can indeed co-occur (e.g., Diener & Iran-Nejad, 1986; Larsen & McGraw, 2011). Contrary to prior objections (e.g., Russell & Carroll, 1999), the existence of mixed emotions is no longer contentious, nor attributable to artifacts or response biases (see Berrios, Totterdell, & Kellett, 2015; Larsen & McGraw, 2011). Thus, researchers are moving from describing mixed emotions towards theorising explanations for their occurrence. For example, Shuman, Sander, and Scherer (2013) posit a cognitive basis for mixed emotions, proposing that they arise from simultaneous *appraisals* (i.e., cognitive evaluations) of positivity and negativity in a stimulus or situation.

Despite this progress, little is known about *individual differences* in mixed emotions. This knowledge gap is surprising, considering the vast literature on personality and emotion (e.g., Larsen & Ketelaar, 1991; Reisenzein & Weber, 2009; Smillie, DeYoung, & Hall, 2015; Watson & Clark, 1992). Without understanding *who* tends to experience mixed emotions, the description and explanation of this phenomenon remains incomplete. We address this gap by examining relations between basic personality traits and a novel dispositional measure of mixed emotions.

1.1. Individual differences in mixed emotions

The embryonic individual differences research on mixed emotions has addressed three distinct phenomena: (1) affective synchrony, (2) tolerance for mixed stimuli, and (3) tendencies to experience mixed emotions.[2] At least two studies investigated whether traits reflecting susceptibilities to particular positive and negative emotions (e.g., Extraversion and Neuroticism) predicted *affective synchrony* (i.e., the within-person correlation between positive and negative emotion states assessed over multiple occasions): One found no association (Rafaeli, Rogers, & Revelle, 2007), whereas the other found some evidence for a positive association (Wilt, Funkhouser, & Revelle, 2011). Critically,

* Corresponding author.
E-mail address: kbarford@student.unimelb.edu.au (K.A. Barford).

[1] Mixed emotions have also been defined as emotional experiences opposite in both valence and *arousal* (i.e., physiological excitation) (e.g., Russell & Carroll, 1999). However, the incremental utility of arousal in describing emotion beyond valence has been contested (Kron, Goldstein, Lee, Gardhouse, & Anderson, 2013). Therefore our definition of mixed emotions refers only to valence.

[2] Others have also investigated *cross-cultural* differences in mixed emotions (e.g., Miyamoto, Uchida, & Ellsworth, 2010), but in this paper we restrict our focus to individual differences in *personality*.

http://dx.doi.org/10.1016/j.paid.2016.07.002
0191-8869/

however, a positive correlation between positive and negative emotion states (i.e., synchrony) does not necessarily indicate mixed emotions. For example, consistent reports of zero positive and zero negative emotions would produce a perfect correlation between the two ratings despite an absence of emotion — mixed or otherwise (see Shimmack, 2001). Therefore, affective synchrony studies cannot reveal who experiences more mixed emotions.

Differential *tolerance* for mixed stimuli and experiences has also been studied, particularly in research concerning reactions to mixed emotional advertising. Perhaps unsurprisingly, individuals with low trait *tolerance for ambiguity* have lower tolerance for mixed advertisements (Janssens, De Pelsmacker, & Weverbergh, 2007). Conversely, individuals with high *construal levels* — reflecting a tendency to think abstractly rather than concretely — have a greater tolerance for mixed advertisements (Hong & Lee, 2010). Although this research does not directly implicate who experiences more mixed emotions, traits related to mixed emotions experiences may be similar to those that predict tolerance for mixed stimuli.

To our knowledge, just two studies have directly investigated differential *tendencies to experience* mixed emotions. Both employed daily-life experience-sampling methodologies (see Mehl & Conner, 2012). In the first (Hui, Fok, & Bond, 2009), participants reported emotional responses to one positive and one negative event weekly for fifteen weeks. Negative events elicited more mixed emotions than positive events overall, but trait *dialectical thinking* (i.e., the tendency to balance evaluations and tolerate contradictions) positively predicted mixed emotional responses to positive events. A more recent study (Koots, Realo, & Allik, 2012) explored relations between mixed emotions and the five basic personality domains (the *Big Five*, see John, Naumann, & Soto, 2008). Extraversion (i.e., sociability and boldness) and Openness/Intellect (i.e., curiosity and imagination) positively predicted simultaneous positive and negative emotion states in daily-life samples, whereas Conscientiousness (i.e., orderliness and reliability) was a negative predictor. Different facets of Neuroticism (i.e., negative and unstable emotionality) predicted incidences of mixed emotions in opposite directions: anxiety negatively, and depression and impulsiveness positively. To our knowledge, Koots et al.'s (2012) study is the first to investigate the relation between major personality domains and the tendency to experience mixed emotions.

1.2. The present study: rationale and predictions

The sparse individual differences research on mixed emotions is difficult to synthesise, given the focus on somewhat idiosyncratic traits (e.g., dialectical thinking, construal level, etc.), and inconsistent mixed emotions measures (e.g., affective synchrony, etc.). Like Koots et al. (2012), we employed the *Big Five* personality taxonomy: a comprehensive yet parsimonious organising framework for personality traits (John et al., 2008). Because these broad domains hierarchically subsume narrower personality traits (DeYoung, Quilty, & Peterson, 2007), understanding their relations with trait mixed emotions may help synthesise research associating mixed emotions with narrower traits. To quantify mixed emotions, we developed a novel measure dispositional mixed emotions measure (the Trait Mixed Emotions Scale; TMES), paralleling the foundational studies on individual differences in trait measures of positive and negative emotions (e.g., Watson & Clark, 1992). The TMES was constructed to assess the broad, generalised tendency to experience mixed emotions, rather than specific incidences of mixed emotions throughout idiosyncratic situations in daily-life (as in Hui et al.'s, 2009, and Koots et al.'s, 2012).

We derived two predictions regarding trait correlates of dispositional mixed emotions. Our primary prediction was that Openness/Intellect, which reflects the tendency to mentally engage with or, *cognitively explore*, uncertain stimuli and 'the unknown' (DeYoung, 2013, 2014; McCrae & Costa, 1997), would positively predict TMES scores. This prediction was based partly on the research linking mixed emotions with traits reflecting cognitive styles such as construal level, ambiguity tolerance, and dialectical thinking — which, whilst distinct from one another, can all be conceptually linked with the Openness/Intellect domain (DeYoung, 2014; Furnham & Marks, 2013). Further, because mixed stimuli are inherently uncertain in terms of their helpful (i.e., positive) or harmful (i.e., negative) nature (Cacioppo, Larsen, Smith, & Berntson, 2004), the propensity for individuals high on Openness/Intellect to cognitively explore such uncertain stimuli (DeYoung, 2013) might produce the conflicting appraisals thought to underlie mixed emotions (Shuman et al., 2013). Finally, conceptualisations of Openness/Intellect, as captured by McCrae and Costa's (1997) statement that "Open individuals have access to more thoughts, feelings, and impulses in awareness, and *can maintain many of these simultaneously*" (p. 838, emphasis added), allude to this hypothesis. We also investigated a secondary hypothesis, that Extraversion and Neuroticism might jointly predict TMES scores. Because these two traits reflect susceptibility to certain positive and negative emotions, respectively (Larsen & Ketelaar, 1991; Smillie, Cooper, Wilt, & Revelle, 2012), this potentially implicates them in *simultaneous* experiences of positivity and negativity.

2. Method

2.1. Participants and procedure

American participants ($N = 141$; 64.5% female; 77% Caucasian; aged 18–70, $M = 31.21$, $SD = 10.48$) were recruited using Amazon's Mechanical Turk—a diverse and practical participant pools for behavioural research (Burmeister, Kwang, & Gosling, 2011, but see also Paolacci & Chandler, 2014)—and paid a rate of ~US$8 per hour. This sample provides 85% power to detect the average effect size in personality psychology ($r \sim 0.25$, Fraley & Marks, 2007). After providing informed consent, participants responded to a randomised series of Qualtrics™ questionnaires. All procedures received ethical approval.

2.2. Measures

2.2.1. The Trait Mixed Emotions Scale (TMES)

We developed the TMES to measure the frequency with which one generally experiences simultaneous positive and negative valence (see supplementary materials). The TMES consists of 13 mixed items (e.g., *both happy and sad*), including three items adapted from a pre-existing mixed emotions scale (Berrios, Totterdell, & Kellett, 2013), presented alongside five positively valenced items (e.g., *happy*), five negatively valenced items (e.g., *sad*), and two relatively neutral items (e.g., *intense*) (Russell, 1980). Participants rated how often they generally feel each of the 25 items on a scale from 1 (never) to 5 (very frequently). Total TMES scores were calculated by summing responses to the 13 mixed items. Scores on the purely positive and purely negative items were also totaled to create trait positivity and trait negativity measures to investigate as potential covariates.

2.2.2. The Big Five aspect scales

The Big Five Aspect Scales (BFAS) measure the Big Five trait *domains* (i.e., Agreeableness, Conscientiousness, Extraversion, Neuroticism, and Openness/Intellect), and the two lower-order *aspects* of each domain (i.e., Politeness, Compassion, Orderliness, Industriousness, Assertiveness, Enthusiasm, Withdrawal, Volatility, Openness, and Intellect) (DeYoung et al., 2007). Each domain measure consisted of 20 descriptive statements (10 per aspect). Participants rated how well the statements (e.g., *warm up quickly to others*) described them on a scale from 1 (strongly disagree) to 5 (strongly agree). Average scores were calculated for all domains and aspects.

2.2.3. The IPIP-120 openness scale

The 24-item IPIP-120 Openness scale (Johnson, 2014) was included to measure Openness/Intellect (i.e., our primary focus in this paper) at