To cite this article:

Erbas, Y., Ceulemans, E., Koval, P., & Kuppens, P. (2015). The role of valence focus and appraisal overlap in emotion differentiation. *Emotion*, *15*(3), 373-382. https://doi.org/10.1037/emo0000039

CITATION: Erbas, Y., Ceulemans, E., Koval, P., & Kuppens, P. (in press). The role of valence focus and appraisal overlap in emotion differentiation. *Emotion*.

The role of valence focus and appraisal overlap in emotion differentiation

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Word count (main text and references): 8523

Funding: This research was supported by the KU Leuven Research Council (grants GOA/10/02, GOA/15/003, OT/11/31) and the Fund for Scientific Research-Flanders.

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Abstract

Emotion differentiation refers to the level of specificity with which people distinguish between their emotional states and is considered to play an important role for psychological well-being. Yet, not much is known about what characterizes people high or low in emotion differentiation and what underlies these differences. In two studies involving experience sampling (Studies 1-2) and lab based (Study 2) methods, we investigated how emotion differentiation is related to individual differences in valence focus and the overlap in appraisal patterns between emotions. In line with expectations, results showed that high levels of both positive and negative emotion differentiation are related to lower levels of valence focus and lower levels of appraisal overlap between emotions. These findings suggest that individuals who are low in emotion differentiation mainly emphasize the valence aspect of emotions while individuals who are high in emotion differentiation make stronger distinctions between emotions in terms of their underlying appraisal profiles.

Abstract word count: 152

Keywords: emotion, emotion differentiation, emotional granularity, valence focus, appraisal

The role of valence focus and appraisal overlap in emotion differentiation

Emotion differentiation or emotional granularity refers to the level of specificity with which people distinguish between their emotional states (Barrett, Gross, Christensen & Benvenuto, 2001). High levels of emotion differentiation seem to be beneficial for or reflect emotional well-being (e.g., Demiralp, et al., 2012; Erbas, Ceulemans, Pe, Koval, & Kuppens, 2014). Yet, little is known about which factors may contribute to individual differences in the ability to distinguish between emotional states. In the current studies we examine the possible role of two factors: the level of valence focus and the degree of appraisal overlap between emotions.

Emotion differentiation

Individuals differ from each other in the extent to which they differentiate between their emotional experiences, something which has been labeled emotion differentiation or emotional granularity (Barrett et al., 2001). While some experience and label their emotions in a highly differentiated manner (e.g., I feel angry, but not scared or sad), others tend to report more undifferentiated states (e.g., 'I feel bad'). The level of emotion differentiation is generally assessed by looking at how people describe how they feel in response to different emotion-eliciting events (Barrett et al., 2001). While some report very specific emotions depending on the context, others' emotional responses are less context-dependent and specific, and tend to have a similar (more abstract) quality across different emotional situations.

As demonstrated by several studies, the ability to differentiate between emotions is considered to be a potentially important individual difference variable in the context of psychological well-being. Being able to differentiate well between (especially negative) emotions is related to several indicators of psychological well-being such as higher self-esteem, lower levels of neuroticism, and lower levels of depression (Erbas et al., 2014). Furthermore, emotion differentiation appears to be lower in individuals with clinical disorders associated with affective problems, such as major depressive disorder (Demiralp et al., 2012), borderline personality disorder (Suvak, Litz, Sloan,

Zanarini, Barrett, & Hofmann, 2011), social anxiety disorder (Kashdan & Farmer, 2014), and autism spectrum disorder (Erbas, Ceulemans, Boonen, Noens, & Kuppens, 2013). Finally, higher levels of negative emotion differentiation seem to function as a protective factor against nonsuicidal self-injury in individuals with borderline personality disorder (Zaki, Coifman, Rafaeli, Berenson, & Downey, 2013), while lower levels of positive emotion differentiation seem to reinforce and motivate weight loss behavior in individuals with anorexia nervosa (Selby, et al., 2013).

In line with the feelings as information perspective (Schwarz, 1990), it can be argued that high levels of emotion differentiation are advantageous for well-being, because the more insight an individual has into his or her feelings, the better s/he can use those feelings as a source of information, and therefore adaptively respond to events and cope with the resulting emotions (Barrett et al., 2001). Empirical backup for this claim is found in the relations between negative emotion differentiation and frequent use of emotion regulation strategies (Barrett et al., 2001) and between positive emotion differentiation and coping styles (Tugade, Fredrickson, & Barrett, 2004). Moreover, the relationship between emotion differentiation and emotion regulation seems especially important when dealing with intense negative emotions (Barrett, et al., 2001), which are in greatest need of regulation in the face of well-being and psychological adjustment (Barrett, et al., 2001; Gross & John, 2003; Gross & Muñoz, 1995).

In sum, previous studies have demonstrated that individuals differ from one another in the extent to which they are able to differentiate between their emotions, with high levels of emotion differentiation being beneficial for the individual, while low levels of emotion differentiation have repeatedly been associated with psychological maladjustment. In the light of these findings, it is important to gain a better understanding of what emotion differentiation exactly entails, and which factors may be responsible for between-person differences in the level of differentiation. However, very little is known about such factors. A good understanding of emotion differentiation and why it differs across individuals involves knowledge about its underlying processes. In the current project

we aim to extend the knowledge in this respect by exploring the role of two fundamental aspects of emotional experiences, namely their valence, and their appraisal components. More specifically, we will focus on the level of valence focus and the amount of overlap in appraisal patterns between emotions.

Valence focus

Individuals differ in the ways they structure their emotions and the emotion characteristics they attend to whilst doing so (e.g., Barrett, 1998, 2006; Feldman, 1995; Kuppens, Tuerlinckx, Russell, & Barrett, 2013; Russell & Barrett, 1999). One central characteristic of an emotional experience is its valence, or whether an emotion is pleasant or unpleasant (Feldman, 1995; Barrett, 2006). Although valence is relevant to each individual's emotional experiences, there seem to be large differences between individuals in its relative importance in coloring subjective experience of emotions: While some mainly focus on whether an emotion is pleasant or unpleasant, other individuals also attend to other aspects of the emotional experience, such as its degree of arousal (Feldman, 1995), predictability, or control (Fontaine, Scherer, Roesch, & Ellsworth, 2007). Such differences between individuals are labeled differences in valence focus.

We hypothesize that a high valence focus is related to lower levels of emotion differentiation. Individuals who mainly focus on the valence aspect of an emotion will primarily look at whether an emotion is positive or negative. This exclusive focus on valence might imply that other characteristics that reflect differences between like-valenced emotions are hardly taken into account, which may lead individuals to distinguish less between them, resulting in lower levels of negative and positive emotion differentiation. For example, individuals who only attend to the hedonic tone of emotions such as anger and depression will perceive these emotions as more similar than individuals who also attend to the arousal part. While the former individuals will mainly focus on the fact that both anger and depression have a negative valence, the latter individuals will also take into account that anger is high and depression is low in arousal, and therefore the difference between these emotions will be

more salient to them, resulting in higher levels of differentiation between these emotions. Likewise, an individual's ability to differentiate between his/her emotions may influence the level of valence focus. If an individual does not strongly distinguish much between emotions of the same valence, then s/he will structure his emotional world primarily according to the valence of his or her emotional experiences.

Indeed, in line with the above reasoning, Barrett (1998) showed that high valence focus is related to more frequent co-occurrence of pairs of like-valenced emotions. In the current project, we aim to build on this finding by examining the relation between valence focus and emotion differentiation further, using both an experience sampling and a laboratory approach. We hypothesize that individuals who mainly attend to the valence of emotions and who therefore are high in valence focus will also differentiate less between emotions of the same valence.

Appraisal overlap

Next to valence, appraisals of emotion-eliciting events are also important components of the emotion process and are considered to play an important role in the development and quality of the emotional experience. According to appraisal theories of emotions, different emotions are associated with or even elicited by distinct combinations of appraisals (Ellsworth, & Scherer, 2003; Frijda, 2007; Kuppens, Champagne, & Tuerlinckx, 2012). According to constructionist accounts of emotions (e.g., Barrett & Lindquist, 2008; Lindquist, 2013), appraisals provide the contextual knowledge that color more undifferentiated affective experiences into more specific emotional experiences. For instance, the feeling of anger is typically associated with the appraisals of goal obstacle or frustration, other accountability and unfairness (Kuppens, Van Mechelen, Smits, & De Boeck, 2003), while the feeling of fear is strongly associated with a low coping potential (Smith & Lazarus, 1993).

Despite such general patterns however, the relations between appraisals and emotional experience are subject to individual differences (Kuppens, Van Mechelen, & Rijmen, 2008; Kuppens, Van Mechelen, Smits, De Boeck, & Ceulemans, 2007). Not only are similar situations differentially

appraised by different individuals (Ceulemans, Kuppens, & Van Mechelen, 2012), there are also individual differences in how appraisals are related to emotional experiences. For instance, for some people anger is strongly associated with blockage of goals, while for others anger is in addition strongly contingent on norm violation or unfairness (Kuppens et al., 2007). As a consequence, people can be expected to differ in how similar the appraisal patterns associated with the different emotional experiences are. While some individuals may have very different appraisal patterns for different emotions, for others the associated appraisal patterns may strongly overlap, a phenomenon which is indeed demonstrated in earlier studies (Kuppens, Van Mechelen, Smits & De Boeck, 2004; Pe, & Kuppens, 2012).

Because of the important role that appraisals play in coloring emotional experience, independent of whether appraisals are assumed to be causal mechanisms or whether they reflect people's conceptual knowledge about emotions, we argue that similarities in appraisal patterns associated with different emotions should be related to similarities in emotional experience. The higher the appraisal overlap between two emotions for an individual, the more likely that they will co-occur and be perceived as more similar. In contrast, the more emotions diverge in terms of associated appraisals, the less they will be perceived as similar and co-occur. Indeed, when two emotions are associated with very different appraisals for an individual, it is unlikely that they will co-occur in one and the same context that is appraised in a particular way by the individual. Applying this to our previous example would mean that individuals who associate anger and fear with very similar appraisals should differentiate relatively little between these emotions and report them concurrently, while individuals whose appraisals between these two emotions strongly diverge would be much less likely to experience them concurrently. In sum, we hypothesize that high similarity in the appraisal patterns of like-valenced emotions is related to lower levels of corresponding emotion differentiation.

Current studies

In two studies, we aim to examine whether individuals' level of emotion differentiation is related to their level of valence focus and appraisal overlap. We hypothesize that higher levels of emotion differentiation are related to lower valence focus and smaller appraisal overlap between like-valenced emotions. In addition, we will examine to what extent valence focus and appraisal overlap uniquely contribute to emotion differentiation. The first study is an experience sampling study in which the indices for emotion differentiation, valence focus and appraisal overlap are all derived from experience sampling data. In the second study, we combine experience sampling methodology with a laboratory measure, allowing the measure of emotion differentiation to be fully independent from the measures of valence focus and appraisal overlap.

Study 1

The aim of this first experience sampling study was to investigate the relation between valence focus and emotion differentiation by replicating the results found by Barrett (1998), and to provide a first examination of how overlap in appraisal patterns is related to emotion differentiation. Because both the emotion differentiation and the valence focus indices will be based on the same experience sampling data, this may lead to some dependence between the measures. Therefore, in line with Barrett (1998), next to examining the relationships across the full data set, we will additionally derive the valence focus index from the experience sampling data from the even days and the emotion differentiation index from that of the odd days, and vice versa, and report corresponding results in footnotes across the text. The data of this study were part of a larger project and have also been reported elsewhere (e.g., Kuppens, Allen, & Sheeber, 2010). Only the materials and results relevant for our research questions will be reported here.

Method

Participants

80 Participants were recruited through an advertisement on the job seeking service of the KU Leuven and were paid €40 for participation. One participant withdrew early from the study,

therefore the final sample consisted of 79 participants (29 male) with a mean age of 23.52 years (*SD* = 7.82).

Procedure

In a first session, participants received a palmtop computer (Palm Tungsten E2). For the next 14 days, participants carried the palmtop during their normal activities and responded to the questions when signaled. Using ESP (Barrett & Barrett, 2001), the beeps were programmed according to a stratified random-interval scheme, with waking hours of each day being divided in 10 equal intervals in which a beep was programmed randomly. At each beep, the palmtop prompted participants to rate their responses to a number of questions (in randomized order). After two weeks, participants attended a second session in which they returned the palmtops. Compliance was good: overall, participants responded to 82.5% (*SD* = 3.80) of the programmed beeps.

Materials

Emotion differentiation. Similar to previous research (see, e.g., Demiralp et al., 2012; Erbas et al., 2014; Kashdan et al., 2010), emotion differentiation was assessed on the basis of experience sampling (Csikszentmihalyi & Larsen, 1987) people's emotional responses to the events in their daily lives. At each beep, participants were asked to indicate how angry, stressed, depressed, anxious, irritated, sad, relaxed, happy, satisfied, and excited they felt by rating these emotions on a slider scale ranging from 1 (not at all) to 100 (very much). Positive and negative emotion differentiation indices were computed for each participant by calculating the intra-class correlation (ICC) measuring consistency (Shrout & Fleiss, 1979) between the negative emotions and between the positive emotions separately across the different assessed time points (see also Erbas et al., 2014). The ICCs were computed across all days, the even days only and the odd days only, resulting in six indices for emotion differentiation. As a high ICC reflects low emotion differentiation, we reversed the ICCs for ease of interpretation such that higher values reflect higher levels of emotion differentiation.

Valence focus. In line with Barrett (1995), participants' scores for valence focus were also derived from their experience sampling data. Each individual's experience sampling emotion data was subjected to a principal factor analysis in which two factors were extracted. Next, these factors were target rotated towards a theoretically expected two-dimensional space consisting of the dimensions of valence and arousal. More specifically, the first factor was rotated so as to maximally resemble a valence dimension (i.e., positive loadings for the positive, and negative loadings for the negative emotions). A person's level of valence focus was then represented by the percentage of variance accounted for by the rotated valence factor (see Barrett, 1998)[1]. Similar to the emotion differentiation indices, the valence focus index was computed across all days, the even days only and the odd days only. After rotating each participant's data towards a valence structure, Tucker's congruence coefficients (Tucker, 1951) were examined to establish the strength of the resemblance with a pure valence and arousal factor, with a value of 1 indicating perfect resemblance and a value of 0 indicating no similarity at all. The congruence coefficients for the valence factor across all days ranged from .78 to 1 and had a mean of .95[2]. For the even days and the odd days, the congruence coefficients respectively ranged from .69 to 1 (*M* = .93) and .59 to 1 (*M* = .93). Next, congruence coefficients were computed for the arousal factor, which ranged from .00 to .74, with a mean of .30 across all days, and from .01 to .78 (*M* = .30) and .00 to .80 (*M* = .31) for the even and the odd days respectively. However, from these descriptives we concluded that almost all participants' rotated factor solutions had higher congruencies with the valence than with the arousal factor (which is in line with Barrett, 1995). Moreover, the congruence coefficients for the arousal factor were low, suggesting that the arousal dimension was not always well represented in the current data.

[1] Although there is conceptual overlap between emotion differentiation and valence focus, it is important to note that the two constructs are not the same. Both theoretically and in terms of how they are calculated, emotion differentiation involves how people deal with emotions from the same valence, while valence focus involves how people experience both positive and negative emotions.

[2] For the valence focus index computed across all days, out of the 79 participants, 16 (resp. 27) had a congruence coefficient lower than .90 (resp. .95). The number of participants with a congruence coefficient lower than .90 (resp. .95) was 19 (resp. 37) for the even, and 19 (resp. 34) for the odd days. Instead of excluding participants with such lower congruence values, we chose to include them in further analyses. Performing the analyses without these participants yielded identical or even more significant results.

Therefore, we did not take individuals' level of arousal focus into account in further analyses, and only considered their level of valence focus.

Appraisal overlap. At each experience sampling beep, participants also reported their appraisals of the events that led to their current feelings. Seven appraisals (reflecting the primary dimensions from the model formulated by Smith and Lazarus, 1993) were included in this study, and each appraisal was examined with one item, rated on a 1 (not at all) to 100 (very much) scale. Specifically, participants were asked to think about what caused their feelings at that very moment ("Think about what causes your feelings right now, to what extent…"), followed by the seven appraisal items. These items measured the appraisals of motivational relevance ("…is this important for you?"), motivational congruence ("…is this advantageous or disadvantageous to you?", with the response ranging from -50 [very disadvantageous] to +50 [very advantageous]), other-agency ("…is someone else responsible for this? "), self-agency ("…are you yourself responsible for this?"), problem focused coping potential ("…do you think you can change something about this situation?"), emotion focused coping potential ("…do you think you can emotionally cope with the situation?"), and future expectancy ("…do you think events will turn out the way you want?").

Appraisal overlap was examined by first calculating the correlations between all emotions and all appraisals across time-points (i.e., the correlations between for instance anger, and the seven appraisal items) per individual, which indicates how much each emotion is associated with each appraisal per participant. This was done separately for each emotion, which allowed constructing an appraisal pattern per emotion. Next, for each participant an appraisal overlap index between emotions was computed which indicated the extent to which the different emotions are characterized by similar associations with the appraisals. This was done by calculating the average Euclidian distance (i.e., the square root of the sum of the squared differences) between the appraisal profiles of all possible emotion pairs (Kuppens, et al., 2004; Pe & Kuppens, 2012), in which a larger

Euclidian distance between emotions indicates smaller overlap in appraisal patterns. For example, the distance between the emotions of anger and fear was calculated as follows:

$$d_{(ang,fear)_i} = \sqrt{\begin{matrix} \left[MotRel_{ang_i} - MotRel_{fear_i}\right]^2 + \left[MotCon_{ang_i} - MotCon_{fear_i}\right]^2 \\ + \left[OthAge_{ang_i} - OthAge_{fear_i}\right]^2 + \left[SelAge_{ang_i} - SelAge_{fear_i}\right]^2 \\ + \left[ProCop_{ang_i} - ProCop_{fear_i}\right]^2 + \left[EmoCop_{ang_i} - EmoCop_{fear_i}\right]^2 \\ + \left[FutExp_{ang_i} - FutExp_{fear_i}\right]^2 \end{matrix}}$$

where $d_{(ang,fear)_i}$ is participant *i*'s Euclidian distance between anger and fear; $MotRel_{ang_i}$ is participant *i*'s correlation between the appraisal item motivational relevance and anger; $MotRel_{fear_i}$ is participant *i*'s correlation between motivational relevance and fear, and so on. A higher value would in this case mean that fear is correlated with the appraisals in a divergent way (it has a different correlational pattern) than anger, whereas a small value would mean that fear and anger have similar associations with the different appraisals. The distance scores between positive, (e.g. happiness and relaxation), negative (e.g., anger and fear), and positive-negative (e.g., happiness and anger) emotion pairs were averaged, which resulted in three separate indices for appraisal overlap for each participant, respectively corresponding to the distance in appraisal patterns between pairs of positive, negative, and positive-negative emotions.

Results and discussion

Table 1 reports the descriptive statistics and interrelations between all emotion differentiation indices and the measures for valence focus and appraisal overlap. The average emotion differentiation indices computed across all days as well as over the even and odd days for both positive and negative emotions (Table 1) were comparable to one another, and to the average level of differentiation found in previous studies (e.g., Erbas et al., 2014; Kashdan et al., 2010; Barrett, 1998). As the emotion differentiation indices were not normally distributed, Spearman's rank order correlation coefficients are reported. In line with some of the previous studies on emotion differentiation (Barrett, 1998; Boden, Thompson, Dizen, & Berenbaum, 2013), the correlation

between the positive and the negative emotion differentiation indices was positive, meaning that individuals who have a high level of positive emotion differentiation also tend to differentiate more between negative emotions.

Our first prediction was that emotion differentiation is negatively related to valence focus. When the indices were derived from all data, the results showed a strong negative relationship between the index for valence focus and the indices for both positive and negative emotion differentiation, meaning that the more variance is explained by the valence factor, the lower the emotion differentiation indices between like-valenced emotions are. This indicates that individuals with a high valence focus indeed differentiate less between like-valenced emotions. Moreover, these findings were replicated when the emotion differentiation indices were derived from the even and the valence focus index from the odd days, and vice versa (see Table 1).

Our second prediction was that higher levels of emotion differentiation are related to smaller overlap in appraisal patterns of like-valenced emotions. When all indices were derived from all data, results confirmed our prediction and showed that higher Euclidian distances between the appraisal patterns of positive emotions were related to higher differentiation between positive emotions, and higher distances between the appraisal patterns of negative emotions to higher differentiation between negative emotions. This indicates that smaller appraisal overlap between positive emotions is related to higher positive emotion differentiation, and smaller appraisal overlap between negative emotions to higher negative emotion differentiation. Again, similar results were obtained when the emotion differentiation indices were derived from only the even days or only the odd days (see Table 1).

In addition to the predicted relationship between emotion differentiation and appraisal overlap between like-valenced emotions, we also exploratively examined how emotion differentiation was related to appraisal overlap between different-valenced emotions (e.g., anger and happiness). Results showed that a higher Euclidian distance between the appraisal patterns of

pairs of positive and negative emotions was related to lower emotion differentiation indices. In other words, individuals who had small overlap in appraisal patterns between pairs of positive and negative emotions seemed to differentiate less between their emotions. Additionally though, appraisal overlap between positive and negative emotion pairs was also strongly related to valence focus, which pointed to the possibility that valence focus may perhaps be partly responsible for the relationship between emotion differentiation and appraisal overlap between different-valenced emotions. Indeed, results showed that after controlling for valence focus, the relationship between appraisal overlap of different-valenced emotions and emotion differentiation decreased for both positive emotions (r_s = -.24, p = .04) and negative emotions (r_s = .14, p = .22) when all indices were derived across all days. These findings were largely replicated when the differentiation indices were derived from only the even days or only the odd days[3].

Finally, we examined whether both valence focus and appraisal overlap were uniquely related to emotion differentiation. When all indices were derived from all data, multiple regression analyses showed that after controlling for one another, positive emotion differentiation was significantly predicted by both valence focus (β = -.55, p < .001, R^2 = .26) and appraisal overlap between positive emotions (β = .37, p < .001, R^2 = .11), and negative emotion differentiation was predicted by both valence focus (β = -.69, p < .001, R^2 = .45) and appraisal overlap between negative emotions (β = .26, p = .001, R^2 = .06). Similar results were obtained when the emotion differentiation indices were derived from the even days and the valence focus index from the odd days, and vice

[3] After controlling for valence focus, the relationship between appraisal overlap of different-valenced emotions and positive emotion differentiation was r_s = -.42, p < .001 when differentiation was derived from the even days and valence focus from the odd days, and r_s = -.56, p < .001 when valence focus was derived from the even days and differentiation from the odd days. For negative emotion differentiation, the relation was r_s = -.00, p = .96 when differentiation was derived from the even days and valence focus from the odd days, and r_s = -.22, p = .05 when valence focus was derived from the even days and differentiation from the odd days.

versa[4]. These findings suggest that both valence focus and appraisal overlap both uniquely contribute to the level of emotion differentiation.

Together, the results of the first study indicate that valence focus and overlap in appraisal patterns between like-valenced emotions are both uniquely related to positive and negative emotion differentiation. However, an important limitation of the present study is that the emotion differentiation indices and the valence focus and appraisal overlap indices were not completely independent, which may have influenced the strength of the correlations between them. Therefore, a second study was conducted in which we aimed to overcome this limitation.

Study 2

The aim of the second study was to replicate the findings from Study 1, but based on independent data. Indeed, similar to Barrett (1998), the relationship between emotion differentiation and valence focus appeared to be very strong in the previous study. As suggested by Barrett (1998), this relationship may be inflated by the fact that both the emotion differentiation and the valence focus indices were derived from the same sample of data for each participant (correlations between participants' repeated emotional experiences during experience sampling). In line with Barrett, we aimed to solve this issue by deriving the valence focus index from the experience sampling data from the even days and the emotion differentiation index from that of the odd days (and vice versa; Barrett, 1998). Yet, because of dependencies and crossover effects of emotional reports across days, full independence of data is not guaranteed. Therefore, in a second study we aimed to address this problem differently by combining experience sampling methodology

[4] When the emotion differentiation indices were derived from only the even days and the valence focus index from the odd days, positive emotion differentiation was predicted by both valence focus ($\beta = -.32$, $p = .002$, $R^2 = .09$) and appraisal overlap between positive emotions ($\beta = .42$, $p < .001$, $R^2 = .16$). Negative emotion differentiation was predicted by valence focus ($\beta = -.41$, $p < .001$, $R^2 = .16$) and appraisal overlap between negative emotions ($\beta = .21$, $p = .05$, $R^2 = .04$). When the emotion differentiation indices were derived from the odd days and the index for valence focus from the even days, results were again comparable; Positive emotion differentiation was again predicted by both valence focus ($\beta = -.20$, $p = .05$, $R^2 = .04$) and appraisal overlap between positive emotions ($\beta = .43$, $p < .001$, $R^2 = .17$), and negative emotion differentiation by valence focus ($\beta = -.34$, $p < .001$, $R^2 = .11$) and appraisal overlap between negative emotions ($\beta = .40$, $p < .001$, $R^2 = .16$).

with a lab measure in which participants watch a number of emotion eliciting film clips and report their level of experienced emotion after each clip (Koval, Pe, Meers, & Kuppens, 2013). The data from the film-clip task will be used to compute a measure for emotion differentiation, after which its relationship with the indices for valence focus and appraisal overlap (derived from the experience sampling data) will be assessed. This approach should ensure that the emotion differentiation index is independent from the valence focus index because it is derived from different data, and collected in independent contexts (laboratory vs. daily life).

Method

Participants

In the context of a larger study (e.g., Koval, et al., 2013; Pe, Raes, & Kuppens, 2013), from a large initial sample of 439 undergraduate students from the KU Leuven, 100 participants were selected to take part in this study. The selection was based on a pre-screening with the aim to select a wide and balanced range of depression scores as measured with the CES-D. One participant withdrew early and four others were excluded due to equipment malfunction (n = 3) or poor compliance (> 40% missing experience sampling data; n = 1). The final sample therefore consisted of 95 participants (36 male), with a mean age of 19.06 years (SD = 1.28). Participants received a payment of € 70 for their participation in the larger study.

Procedure

The study lasted for seven consecutive days. On the first day, participants came to the lab and completed the film-clip task, after which they received a palmtop computer (Palm Tungsten E2). Using ESP (Barrett & Barrett, 2001), the palmtop was programmed to beep ten times a day for seven consecutive days according to a stratified random-interval scheme, with waking hours of each day being divided in 10 equal intervals in which a beep was programmed randomly. Similar to the previous study, at each beep, the palmtop prompted participants to rate their responses to a number

of questions (in randomized order). After seven days, participants attended a second session in which they returned the palmtops. On average, participants responded to 91.5% (*SD* = 6.20) of the beeps.

Materials

Emotion differentiation. A first measure of emotion differentiation was derived from the experience sampling data. At each sampling moment, participants were prompted to indicate how they felt at that moment, by rating a number of emotions (happy, relaxed, sad, depressed, anxious, and angry) on a 1 (not at all) to 100 (very much) slider scale. Similar to the previous study, a negative emotion differentiation index was computed for each participant by calculating the ICC between the negative emotion ratings across the experience sampling period. Because there were only two positive emotions, a positive emotion differentiation index was computed by correlating the two positive emotions across the experience sampling period for each individual separately.

To derive a second, independent measure of emotion differentiation, a film-clip task (Koval, et al., 2013) was administered. The task consisted of rating 10 emotional film-clips (positive, negative and neutral valenced) which were selected from a validated database of emotion-eliciting film excerpts (Schaefer, Nils, Sanchez, & Philippot, 2010). The selected film-clips were English-spoken with Dutch subtitles, and each film-clip lasted between 0:25 and 2:28 minutes. Participants watched the film-clips individually in separate cubicles on computer screens, in a fixed order. After each film-clip, participants were instructed to indicate how they were feeling at that moment, by rating the same emotion terms as in the experience sampling (happy, relaxed, sad, depressed, anxious, and angry) on a scale ranging from 0 (not at all) to 6 (very much). Again, differentiation indices were computed for each participant by calculating and reverse-coding the ICC between the negative emotion ratings and the correlation between the positive emotion ratings.

Valence focus. Valence focus indices were computed on the basis of the experience sampling data. Similar to Study 1, participants' emotional experience scores during the experience sampling period were subjected to a principal factor analysis, and a target rotation towards a valence

and arousal structure was performed. The Tucker's congruence coefficients for the valence factor ranged from .62 to 1 and had a mean of .97, whereas the congruence coefficients for the arousal factor ranged from .00 to 1, with a mean of .42. Again all participants, except one, had higher congruencies for the valence factor, and the congruence coefficients of the arousal factor were very low. Therefore, we excluded this one participant from further analyses and only considered participants' level of valence focus as reflected by the percentage of variance explained by the rotated valence factor.

Appraisal overlap. In line with the previous study, participants also reported their appraisals of the events that led to their current feelings during the experience sampling period. At each beep, participants were again asked to think about what caused their feelings at that very moment, followed by the same appraisal items (Smith & Lazarus, 1993) as in the first study, with the exception of the item measuring future expectancy (which was not administered in this study). Next, appraisal overlap indices were calculated by averaging the Euclidian distance between the appraisal patterns of all possible emotion pairs (Kuppens, et al., 2004; Pe & Kuppens, 2012), in which a larger Euclidian distance between emotions indicates smaller overlap in appraisal patterns. The distance scores between positive, negative, and positive-negative emotion pairs were averaged, which again resulted in three separate indices for appraisal overlap for each participant.

Results and Discussion

Table 2 reports the descriptive statistics and interrelations between the emotion differentiation indices and the measures for valence focus and appraisal overlap. The average ICCs for both positive and negative emotions in the experience sampling and the film-clip data were in line with Study 1. As the emotion differentiation indices did not conform to a normal distribution, again Spearman's rank order correlation coefficients are reported.

Similar to Study 1 and in line with some of the earlier studies (Barrett, 1998; Boden et al., 2013) the correlations between the positive and the negative emotion differentiation indices were

positive for both the experience sampling data as well as the film-clip data, meaning that individuals who have a high level of positive emotion differentiation also tend to differentiate more between negative emotions. Furthermore, both the positive and the negative indices for emotion differentiation that were derived from the different tasks were positively but modestly related to one another, indicating that the emotion differentiation measures derived from people's response to daily events at least in part correspond to emotion differentiation measures derived from people's responses to standardized emotional stimuli in the lab.

We first assessed the relationships between emotion differentiation, valence focus and appraisal overlap in the experience sampling data. Results showed that the findings from Study 1 are replicated; higher levels of both positive and negative emotion differentiation were related to lower valence focus, while smaller overlap in appraisal patterns between positive emotions was related to higher positive emotion differentiation, and smaller overlap in appraisal patterns between negative emotions was related to higher negative emotion differentiation. Again, higher emotion differentiation appeared to be related to larger overlap in appraisal patterns between different-valenced emotions, but a partial correlation analysis showed that this relationship disappeared after controlling for valence focus (r_s =- .12, p = .25 for positive emotion differentiation and r_s = .19, p = .07 for negative emotion differentiation). To examine whether valence focus and appraisal overlap were both uniquely related to emotion differentiation, multiple regression analyses were performed which showed that, after controlling for one another, positive emotion differentiation was significantly related to both valence focus (β = -.26, p < .001, R^2 = .06) and appraisal overlap between positive emotions (β = .63, p < .001, R^2 = .36), while negative emotion differentiation was related to both valence focus (β = -.75, p < .001, R^2 = .42) and appraisal overlap between negative emotions (β = .15, p = .02, R^2 = .02).

Next, we assessed how the emotion differentiation indices derived from the film-clip task were related to valence focus and appraisal overlap. Although the relationships were less strong,

negative emotion differentiation measured with the film-clip task was again related to lower valence focus, lower overlap in appraisal patterns between negative emotions, and higher overlap in appraisal patterns between different-valenced emotions in the experience sampling data. Positive emotion differentiation was weakly related to valence focus, but significantly related to lower appraisal overlap between positive emotions, and higher appraisal overlap between different-valenced emotions. The relationships between emotion differentiation and appraisal overlap between different-valenced emotions again disappeared after controlling for valence focus (r_s = .07, p = .48 for negative emotion differentiation and r_s = -.08, p = .46 for positive emotion differentiation). Finally, we examined whether valence focus and appraisal overlap were both uniquely related to emotion differentiation assessed with the film-clip task. Multiple regression analysis showed that after controlling for one another, negative emotion differentiation was related to appraisal overlap between negative emotions, (β = .29, p < .01, R^2 = .06) but not anymore to valence focus (β = -.14, p = .23, R^2 = .02). Positive emotion differentiation on the other hand, was related to appraisal overlap between positive emotions (β = .25, p = .02, R^2 = .06) and marginally to valence focus (β = -.20, p = .06, R^2 = .02).

In sum, results from this second study largely replicate those from Study 1. Similar to the previous study, both positive and negative emotion differentiation were related to lower levels of valence focus, whereas a higher differentiation between negative emotions was related to smaller overlap in appraisal patterns of negative emotions and higher differentiation between positive emotions was related to smaller overlap in appraisal patterns of positive emotions. Importantly, the findings from this study show that these relations remain when emotion differentiation on the one hand and valence focus and appraisal overlap on the other hand are derived from independent data. However, the relationships between emotion differentiation and valence focus were now largely explained by appraisal overlap.

General Discussion

The concept of emotion differentiation has garnered a lot of attention throughout the past decade, not in the least because of its suggested role in psychological well-being and emotion regulation. Yet, the processes that characterize people high or low in emotion differentiation remain relatively unknown. In two studies we showed that people's level of emotion differentiation is related to the degree to which they focus on the valence aspect of emotions, and to the degree of overlap in the appraisal patterns associated with their emotions. In other words, people characterized by high levels of emotion differentiation make more fine-grained distinctions between emotions in terms of associated appraisals and focus less on the broader aspect of their valence, while people who are low in emotion differentiation primarily emphasize that valence aspect of emotion and make fewer distinctions in terms of appraisals. Importantly, the findings were found for both positive and negative emotions, suggesting that these may be general principles playing in emotion differentiation.

Regarding valence focus, our findings suggest that for low differentiators, emotions with a similar valence are experienced in terms of more general feelings of feeling good or feeling bad, while feeling good and bad are strongly mutually distinguished however. In other words, while low differentiators seem to differentiate little between similarly valenced emotions, they distinguish *more* between different-valenced emotions, in the sense that they strongly differentiate between positive and negative feelings. Low differentiators seem to have a more bifurcative view on emotions, perceiving larger differences between positively and negatively valenced states. The opposite holds for high differentiators who distinguish sharply between feelings of the same valence, but place less emphasis on the distinction between positive or negative states. However, it is important to point out that the relation between emotion differentiation and valence focus was largely explained by appraisal overlap, when the measures of emotion differentiation and valence focus were derived from independent data. This finding suggests that the differentiation between like-valenced emotions is more strongly driven by appraisal distinctions instead of the degree of valence emphasis. In a sense, this is not surprising when it comes to differentiating between

emotions of the same valence. If valence focus indeed only predicts a tendency to experience emotions as positive or negative, then more fine-grained appraisals or other sources of conceptual knowledge about emotions are more informative compared to their valence when it comes to distinguishing between like-valenced emotions.

However, results did show that an individual's level of valence focus was important to consider for understanding the relationship between emotion differentiation and appraisal overlap between pairs of differently valenced emotions (such as anger and happiness), as valence focus largely explained the relationship between emotion differentiation and overlap in appraisal patterns between differently valenced emotions. This indicates that the essential information conveyed in appraisal overlap between differently-valenced emotions that relates to emotion differentiation, concerns the valence of the emotion, supporting the previous conclusion that high, resp. low differentiation between like-valenced emotions and a weak, resp. strong focus on valence go hand in hand.

With regard to appraisal overlap, we hypothesized that higher overlap between the appraisal patterns of emotions makes it more likely that these emotions will co-occur, resulting in lower levels of differentiation, a notion supported by our findings. One possible implication of the finding that emotion differentiation appears to be related to appraisal overlap between like-valenced emotions, is that emotion differentiation may not (only) reflect an individual's ability to label emotions in a less/more differentiated manner, but also that the emotions might actually be experienced in a rather similar/dissimilar way. The way in which emotion differentiation is assessed in this and previous studies does not allow to distinguish whether it mainly reflects differences in actual experience versus differences in the reporting or labeling of emotions, given similar experience. However, the current findings suggest that this measure of emotion differentiation may cover something deeper than merely the ability to label emotions, and may in fact represent individuals' ability to differentiate between their actual emotional experiences. Individuals high in differentiation

appear to possess a much more complex understanding of specific emotions, including their motivational consequences, whether they engender feelings of control, and what sort of perceptions of the future they cause. This complexity with which high differentiators understand emotions, as reflected in their differentiated appraisal patterns for different emotions, seems to play an important role in the emotional experience. In that sense, the results of this study imply that high and low differentiators do not just label their emotions differently from one another, but that they fundamentally differ in the nature of their emotional experiences; While high differentiators' emotions have a more complex architecture, individuals who are low in emotion differentiation possess more similar contextual and appraisal knowledge regarding the different emotions, and experience their emotions mainly in terms of positive or negative states (which is also reflected in high levels of valence focus). Finally, on a more general level, it can be noted that the findings of this study are in line with both (causal) appraisal theories, as well as constructivist theories on emotions. Independent of whether appraisals are believed to have a causal relevance for the emotional experience or whether they are considered to be dimensions that describe people's knowledge about emotion concepts (e.g., see Barrett & Lindquist, 2008; Lindquist 2013 for discussions), our findings show that they do appear to be important for the quality of the experienced emotion.

Despite several strengths including the multi-method approach and replication, there are also some limitations to our studies. First of all, our studies are correlational and more experimental research is required to examine the direction of the relationships between valence focus, appraisal overlap and emotion differentiation. Another critical note concerns the overlap between the two different methods that we used to assess emotion differentiation. It appeared that the emotion differentiation indices from experience sampling and the lab task were only moderately correlated with one another, which may imply that they are not measuring the exact same phenomenon. While it has been shown that emotion differentiation measures from the lab yield largely similar associations with third variables as those derived from daily life reports (Erbas et al., 2014), our findings do indicate that individual differences in emotion differentiation in daily life may also be

influenced by other factors, such as the type of events people encounter. Another explanation for the moderate correlations between the differentiation indices may be that an individual's level of emotion differentiation is simply not very stable across time. Therefore, linking up with the need for more experimental or longitudinal studies, future research needs to establish the extent to which emotion differentiation should be considered a stable, dispositional trait, or a characteristic that may fluctuate across context and time. At present, most research treats it as a relatively stable trait-like characteristic, but the question remains to what extent it is influenced by short term volitional (e.g., motivation to approach or avoid emotions; Erbas et al., 2014) or capacity-bound factors such as working-memory. Finally, future research should examine whether individuals not only differ in how *much* they differentiate (or their level of differentiation), but also between exactly *which* emotions they differentiate more (or less), and to which extent this also lines up with making associated appraisal distinctions between these emotions. For instance, individuals who don't differentiate much between anger and fear would be expected to have similar appraisal profiles for anger and fear, whereas individuals who do differentiate highly between these emotions would be expected to have smaller overlap in appraisal profiles. A more fine-grained approach to emotion differentiation may in fact reveal different ways in which individuals can differentiate between emotions. In sum, our findings show that individual differences in the ability to differentiate between one's emotions are related to factors that are known to be important for emotional experience: the degree of valence focus and overlap in appraisal patterns. These findings contribute to the literature on emotion differentiation by identifying two possible mechanisms that may underlie individual differences in emotion differentiation.

References

Barrett, L. F. (1998). Discrete emotions or dimensions? The role of valence focus and arousal focus. *Cognition and Emotion, 12,* 579–599.

Barrett, L. F. (2006). Valence is a basic building block of emotional life. *Journal of Research in Personality, 40,* 35-55.

Barrett, L. F., & Barrett, D. J. (2001). An introduction to computerized experience sampling in psychology. *Social Science Computer Review, 19,* 175-185.

Barrett, L. F., Gross, J., Christensen, T.C., & Benvenuto, M. (2001). Knowing what you're feeling and knowing what to do about it: Mapping the relation between emotion differentiation and emotion regulation. *Cognition and Emotion, 15,* 713-724.

Barrett, L. F., & Lindquist, K. A. (2008). The embodiment of emotion. In G. R. Semin & E. R. Smith (Eds.), *Embodied grounding: Social, cognitive, affective, and neuroscientific approaches.* New York, NY: Cambridge University Press.

Boden, M. T., Thompson, R. J., Dizén, M., Berenbaum, H., & Baker, J. P. (2013). Are emotional clarity and emotion differentiation related? *Cognition and Emotion, 27,* 961–978.

Ceulemans, E., Kuppens, P., & Van Mechelen, I. (2012). Capturing the structure of distinct types of individual differences in the situation-specific experience of emotions: The case of anger. *European Journal of Personality, 26,* 484-495.

Csikszentmihalyi, M., & Larsen, R. E. (1987). Validity and reliability of the experience-sampling method. *Journal of Nervous and Mental Disease, 175,* 526-536.

Demiralp, E., Thompson, R. J., Jaeggi, S. M., Buschkuehl, M., Barrett, L. F., Ellsworth, P. C., … Jonides, J. (2012). Feeling blue or turquoise? Emotional differentiation in major depressive disorder. *Psychological Science, 23,* 1410–1416.

Ellsworth, P. C., & Scherer, K. R. (2003). Appraisal processes in emotion. In R. J. Davidson, K. R. Scherer, & H. H. Goldsmith (Eds.), *Handbook of affective sciences* (pp. 572–595). New York, NY: Oxford University Press.

Erbas, Y., Ceulemans, E., Boonen, J., Noens, I., & Kuppens, P. (2013). Emotion differentiation in autism spectrum disorder. *Research in Autism Spectrum Disorders, 7,* 1221-1227.

Erbas, Y., Ceulemans, E., Pe, M. L., Koval, P., & Kuppens, P. (2014). Negative emotion differentiation: Its personality and well-being correlates and a comparison of different assessment methods. *Cognition & Emotion, 28,* 1196-1213.

Feldman, L. A. (1995). Valence focus and arousal focus: Individual differences in the structure of affective experience. *Journal of Personality and Social Psychology, 69,* 153–166.

Fontaine, J. R., Scherer, K. R., Roesch, E. B., & Ellsworth, P. C. (2007). The world of emotions is not two-dimensional*. Psychological Science, 18,* 1050-1057.

Frijda, N. H. (2007). *The laws of emotion.* Mahwah, NJ: Erlbaum.

Kashdan, T. B., & Farmer, A. S. (in press). Differentiating Emotions Across Contexts: Comparing Adults With and Without Social Anxiety Disorder Using Random, Social Interaction, and Daily Experience Sampling. *Emotion.*

Kashdan, T. B., Ferssizidis, P., Collins, R. L., & Muraven, M. (2010). Emotion differentiation as resilience against excessive alcohol use. An ecological momentary assessment in underage social drinkers. *Psychological Science, 21,* 1341-1347.

Koval, P., Pe, M. L., Meers, K., & Kuppens, P. (2013). Affect dynamics in relation to depressive symptoms: Variable, unstable or inert? *Emotion, 13,* 1132-1141.

Kuppens, P., Allen, N. B., & Sheeber, L. B. (2010). Emotional inertia and psychological maladjustment. *Psychological Science, 21,* 984-991.

Kuppens, P., Champagne, D., & Tuerlinckx, F. (2012). The dynamic interplay between appraisal and core affect in daily life. *Frontiers in Psychology, 3,* 1-8.

Kuppens, P., Tuerlinckx, F., Russell, J. A., & Barrett, L. F. (2013). The relation between valence and arousal in subjective experience. *Psychological Bulletin, 139,* 917-940.

Kuppens, P., Van Mechelen, I., & Rijmen, F. (2008). Toward disentangling sources of individual differences in appraisal and anger. *Journal of Personality, 76,* 969–1000.

Kuppens, P., Van Mechelen, I., Smits, D. J. M., & De Boeck, P. (2003). The appraisal basis of anger: Specificity, necessity, and sufficiency of components. *Emotion, 3,* 254-269.

Kuppens, P., Van Mechelen, I., Smits, D. J., & De Boeck, P. (2004). Associations between emotions: Correspondence across different types of data and componential basis. *European Journal of Personality, 18,* 159–176.

Kuppens, P., Van Mechelen, I., Smits, D. J. M., De Boeck, P., & Ceulemans, E. (2007). Individual differences in patterns of appraisal and anger experience. *Cognition & Emotion, 21,* 689-713.

Lindquist, K. A. (2013). Emotions emerge from more basic psychological ingredients: A modern psychological constructionist model. *Emotion Review, 5,* 356–368.

Pe, M. L., & Kuppens, P. (2012). The dynamic interplay between emotions in daily life: Augmentation, blunting, and the role of appraisal overlap. *Emotion, 12,* 1320-1328.

Pe, M. L., Raes, F., & Kuppens, P. (2013). The cognitive building blocks of emotion regulation: Ability to update working memory moderates the efficacy of rumination and reappraisal on emotion. *PLoS ONE, 8,* e69071, 1-12.

Russell, J. A., & Barrett, L. F. (1999). Core affect, prototypical emotional episodes, and other things called emotion: Dissecting the elephant. *Journal of Personality and Social Psychology, 76,* 805–819.

Schaefer, A., Nils, F., Sanchez, X., & Philippot, P. (2010). Assessing the effectiveness of a large database of emotion-eliciting films: A new tool for emotion researchers. *Cognition and Emotion, 24,* 1153-1172.

Selby, E. A., Wonderlich, S. A., Crosby, R. D., Engel, S. G., Panza, E., Mitchell, J. E., Crow, S. J., Peterson, C. B., & Le Grange, D. (in press). Nothing Tastes as Good as Thin Feels: Low Positive Emotion Differentiation and Weight-Loss Activities in Anorexia Nervosa. *Clinical Psychological Science.*

Smith, C. A., & Lazarus, R. S. (1993). Appraisal components, core relational themes, and the emotions. *Cognition & Emotion, 7,* 233–269.

Suvak, M. K., Litz, B. T., Sloan, D. M., Zanarini, M. C., Barrett, L. F., & Hofmann, S. G. (2011). Emotional granularity and borderline personality disorder. *Journal of abnormal psychology, 120,* 414-426.

Tucker, L. R. (1951). A method for synthesis of factor analysis studies *(Personnel Research section Rep. No. 984). Washington, DC: Department of the Army.*

Tugade, M. M., Fredrickson, B. L., & Barrett, L. F. (2004). Psychological resilience and positive emotional granularity: Examining the benefits of positive emotions on coping and health. *Journal of Personality, 72,* 1161-1190.

Zaki, L. F., Coifman, K. G., Rafaeli, E., Berenson, K. R., & Downey, G. (2013). Emotion differentiation as a protective factor against nonsuicidal self-injury in borderline personality disorder. *Behavior Therapy, 44,* 529-540.

Table 1

Means, Standard Deviations and Correlations between Emotion Differentiation, Valence Focus, and Appraisal Overlap in Study 1

	Measure	*M (SD)*	1	2	3	4	5	6	7	8	9	10	11
1.	Positive ED – all days	.78 (.11)											
2.	Positive ED – even days	.77 (.13)	.89**										
3.	Positive ED – odd days	.77 (.13)	.86**	.59**									
4.	Negative ED – all days	.65 (.15)	.31**	.21†	.39**								
5.	Negative ED – even days	.62 (.18)	.17	.17	.19†	.90**							
6.	Negative ED – odd days	.64 (.19)	.40**	.20†	.53**	.87**	.61**						
7.	Valence focus – all days	.41 (.10)	-.72**	-.63**	-.68**	-.75**	-.62**	-.74**					
8.	Valence focus – even days	.42 (.10)	-.57**	-.65**	-.38**	-.58**	-.63**	-.44**	.83**				
9.	Valence focus – odd days	.41 (.11)	-.64**	-.43**	-.79**	-.69**	-.47**	-.82**	.88**	.56**			

10.	Euclidian distance appraisal profiles positive emotions	.33 (.11)	.68**	.64**	.57**	.28*	.14	.34**	-.49**	-.34**	-.42**	
11.	Euclidian distance appraisal profiles negative emotions	.48 (.14)	.00	.02	.02	.32**	.24*	.33**	-.16	-.02	-.16	.23*
12.	Euclidian distance appraisal profiles positive-negative emotions	1.42 (.41)	-.70**	-.61**	-.65**	-.57**	-.46	-.55**	.82**	.70**	.75**	-.39**	.11

Note. ED = emotion differentiation. Means and standard deviations are based on the raw ICCs, whereas the correlational analyses are based on the reversed ICCs. † $p < .10$; * $p < .05$; ** $p < .01$

Table 2

Means, Standard Deviations and Correlations between Emotion Differentiation, Valence Focus, and Appraisal Overlap in Study 2

	Measure	*M (SD)*	1	2	3	4	5	6	7
1.	Positive ED - ESM	.53 (.20)							
2.	Negative ED - ESM	.65 (.18)	.28**						
3.	Positive ED – film-clip	.69 (.25)	.26*	.07					
4.	Negative ED – film-clip	.71 (.22)	.20*	.23*	.46**				
5.	Valence focus	.46 (.11)	-.41**	-.87**	-.18†	-.31**			
6.	Euclidian distance appraisal profiles positive emotions	.40 (.20)	.69**	.18†	.32**	.12	-.27**		
7.	Euclidian distance appraisal profiles negative emotions	.43 (.15)	.18†	.57**	.17	.26*	-.57**	.22*	
8.	Euclidian distance appraisal profiles positive-negative emotions	1.34 (.41)	-.39**	-.55**	-.18†	-.24*	.71**	-.33	-.33**

Note. ED = emotion differentiation. Means and standard deviations are based on the raw ICCs, whereas the correlational analyses are based on the reversed ICCs. † $p < .10$; * $p < .05$; ** $p < .01$