

Knowing what you're feeling and knowing what to do about it: Mapping the relation between emotion differentiation and emotion regulation

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Individuals differ considerably in their emotion experience. Some experience emotions in a highly differentiated manner, clearly distinguishing among a variety of negative and positive discrete emotions. Others experience emotions in a relatively undifferentiated manner, treating a range of like-valence terms as interchangeable. Drawing on self-regulation theory, we hypothesised that individuals with highly differentiated emotion experience should be better able to regulate emotions than individuals with poorly differentiated emotion experience. In particular, we hypothesised that emotion differentiation and emotion regulation would be positively related in the context of intense negative emotions, where the press for emotion regulation is generally greatest. To test this hypothesis, participants' negative and positive emotion differentiation was assessed using a 14-day diary protocol. Participants' regulation of negative and positive emotions was assessed using laboratory measures. As predicted, negative emotion differentiation was positively related to the frequency of negative emotion regulation, particularly at higher levels of emotional intensity.

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At times, we know exactly how we feel: we are angered by blocked goals, saddened by a loss, or afraid of an impending challenge. At such times, we represent our feelings in a precise and differentiated fashion. Knowing how we feel helps to inform us about the significance of the immediate situation, to work out what we should do next, and to indicate what, if anything, we should do about changing how we feel. At other times, however, our feelings are a hopeless muddle. At such times, we represent our feelings in a global fashion, and resort to describing our feelings as generally pleasant or unpleasant. Not knowing precisely how we feel, it's that much harder to use our feelings as information about our current situation (Schwarz & Clore, 1983, 1996), to work out what to do next, and to figure out how to go about modifying how we feel.

Emotion differentiation

Just as there are differences in emotional differentiation within any one person across situations (Feldman Barrett & Aronson, 1998), so too there are differences in emotional differentiation *between* individuals (Feldman, 1995; Feldman Barrett, 1998). Some individuals tend to parse their emotional experience in a discrete, differentiated fashion. In intensive repeated-measure studies, such as those afforded by experience-sampling procedures, these individuals display more distinctive representations of their felt experience across time. They evidence smaller correlations between negative states, such as anger, sadness, and nervousness, or between different positive states, such as happiness, relaxation, and enthusiasm.

In contrast, other individuals represent their emotional experiences in an undifferentiated fashion along a single pleasant-unpleasant dimension. These individuals evidence large positive correlations between self-reports of similarly valenced emotional states across episodes. Such correlations suggest that at any given time, these individuals are not distinguishing between different emotional experiences, but rather they are using emotion language to represent the general pleasantness or unpleasantness of their feelings.¹ One important implication of differences in emotion differentiation is that individuals who have highly differentiated emotion experiences may have more highly activated discrete emotion knowledge during the representation process than individuals with global emotion experiences. The emotion knowledge includes the abstract cause of an experience (i.e., we become angry *with* someone, afraid *of* something, sad *about* something), its relational context, the expected bodily sensations, its expressive modes (i.e., display rules for expression), and sequences of action to take to enhance or reduce the experience (i.e., plans of emotion regulation; Mesquita & Frijda, 1992; Shweder, 1993). These mental representations func-

¹Emotion differentiation is defined by associations, rather than absolute co-occurrence of level, in self-reports of emotional experience.

tion like culturally constructed internal guides or working models of emotional episodes (Saarni, 1993). Thus, individual differences in emotion differentiation may provide important clues regarding the extent to which discrete emotion knowledge is activated during the process of experiencing emotion.

Emotion differentiation and emotion regulation

If greater emotion differentiation is associated with more highly activated discrete emotion knowledge, emotion differentiation should have implications for emotion regulation. This is because discrete emotion concepts provide a wealth of information regarding the behavioural repertoire for dealing with the experience and coping with the larger situation. If this information is highly accessible in those who generate differentiated conscious emotional experiences (because the knowledge contained in those concepts is activated), but not in those with relatively undifferentiated emotional experiences, individuals with highly differentiated emotion experience should be at an advantage in regulating their emotions.

We might expect this differentiation-regulation relationship to be strongest in the context of intense negative emotions, where the press for emotion regulation is greatest. Although individuals report regulating both positive and negative emotions (Parrott, 1993), the greatest call for emotion regulation typically comes when there are high levels of negative emotions such as anger, sadness, and fear. Negative emotional experiences have great informational value in signalling the need to change or adjust one's current state or activity (Pratto & John, 1991). Moreover, failure to respond to a negative signal can be very costly because an individual may not take steps to avoid potential harm (Quigley & Feldman Barrett, 1999). In contrast, positive emotions appear to motivate an individual to broaden and build, that is, to explore new intellectual and social pursuits and store resources for future negative events that require regulatory attempts (see Fredrickson, 1998, for a review). Failure to capitalise on a positive signal may prove costly in the long run, but is unlikely to have the immediate effects associated with failure to regulate a negative emotional episode.

All negative emotion does not require regulation, however. Intense emotional experiences are more motivationally relevant (Frijda, 1986; Smith & Pope, 1992) and likely signal the need for active coping (Lazarus, 1991) more so than do less intense experiences. Although many individuals experience their emotions intensely, not everyone can identify what they are feeling with precision and clarity (Gohm & Clore, 2000). On average, individuals who are aware that they feel intensely negative may be more motivated to regulate their experience, but their ability to determine that they are angry, sad, or afraid should facilitate their regulatory attempts.

Given the particular press to regulate intense negative emotions, we reasoned that those who could regulate intense negative emotions would do so, and that

individuals with high levels of negative emotion differentiation who also experienced intense emotional states should therefore report the greatest levels of negative emotion regulation.

OVERVIEW OF THE PRESENT STUDY

To test our hypothesis that emotion differentiation should be positively related to emotion regulation, we assessed emotion differentiation and sampled broadly from a theoretically defined set of emotion regulatory strategies. To assess emotion differentiation, we asked participants to complete daily diaries for two weeks concerning their most intense emotion experiences. Emotion differentiation and intensity indices were computed from these experience-sampling data. To assess emotion regulation, we asked participants to indicate the extent to which they had regulated their negative and positive emotion over a two week period. To ensure that there were no artifactual dependencies between our measures of emotion differentiation and emotion regulation, we used a recall-based measure of emotion regulation, and obtained this measure prior to the experience-sampling period used to estimate emotion differentiation.

Our specific prediction was that individuals who reported intense negative emotions, and who showed high levels of negative emotion differentiation in their diary reports, would report the greatest negative emotion regulation

METHOD

Participants

A total of 53 participants (19 men) completed diary ratings and three laboratory sessions. The majority of participants (90.5% of final sample) completed at least three-quarters of their diaries over the observation week. On average, participants completed 13 of the 14 diaries ($SD = 2.21$) with a minimum of 5 and a maximum of 14. All participants received course credit and tickets for a US\$50 lottery for their participation.²

Measures

Emotion differentiation. We adapted the Rochester Interaction Record (RIR; Reis & Wheeler, 1991) to assess the nature of participants' most intense emotional experience of the day. Participants rated their most intense emotional

²Participants were removed from the sample if: (1) they did not complete the experience-sampling portion of the study (9 participants), (2) they reported using memory to complete more than 30% of their diaries (13 participants), or (3) if they did not complete enough diaries to produce variation in their emotion ratings (6 participants). Removed participants did not display a consistently different pattern of responses on any variables of interest when compared to those who were retained in the final sample.

experience each day for 14 days using a series of nine affect terms on a 5-point Likert scale (0 = not at all, 4 = very much). From these ratings we computed one positive and one negative emotion differentiation index. The positive emotion differentiation index was computed by calculating the correlations between the experience of *happiness*, *joy*, *enthusiasm*, and *amusement* across time for each participant. These emotions were chosen because they represented a range of prototypical pleasant emotional states. Large correlations reflect large degrees of co-occurrence, and little differentiation in these emotional states, whereas smaller correlations reflect smaller degrees of co-occurrence and more differentiation (Feldman Barrett, 1998). Fisher *r*-to-*z* transformations were performed on all correlations before additional analyses were completed. One set of correlations was computed and averaged for each participant. A similar procedure was followed for the negative emotion differentiation index (using the terms *nervous*, *angry*, *sad*, *ashamed*, and *guilty*). Coefficient alphas for the emotion differentiation indices indicated that individuals who displayed a large correlation between one pair of positive emotions did so for the others as well, α for positive emotion differentiation = .83, $p < .01$. A similar situation occurred for negative emotions, α for negative emotion differentiation = .73, $p < .01$. Negative emotion differentiation indices ranged from $r = -.17$ to $r = .78$, with a mean of $r = .33$ and a standard deviation of 0.28. Positive differentiation indices ranged from $r = .23$ to $r = .93$, with a mean of $r = .74$ and a standard deviation of .32. Unlike previous findings (Feldman Barrett, 1998), the two differentiation indices were not correlated, $r = -.10$, *r.s.*

Emotion intensity. A momentary intensity index was derived for each participant by taking the sum of pleasant emotions for days when positive affect was the dominant subjective state and of unpleasant emotions on days when negative affect was the dominant state (e.g., Diener, Larsen, Levine, & Emmons, 1985; Larsen & Diener, 1987). Emotion intensity ranged from 0.63 to 2.64, with a mean of 1.91 and a standard deviation of 0.45. Intensity was moderately correlated with both the negative ($r = .47$, $p < .01$) and the positive ($r = .30$, $p < .05$) emotion discrimination indices.

Emotion regulation. Participants indicated the extent to which they engaged in nine forms of emotion regulation over the previous two weeks using a 7-point Likert scale (1 = not at all, 7 = a great deal). Items were carefully chosen to represent five theoretically defined points in the emotion generative process that are particularly important to emotion regulation: situation selection, situation modification, attentional deployment (rumination and distraction), cognitive change (reappraisal and talking to others), and response modulation (suppression, masking, and self-soothing) (Gross, 1998). For each of these eight regulation strategies, participants rated separately the degree to which they had used this strategy to regulate positive and negative emotions. Items were summed to

compute one two-week experience regulation index for positive emotion and one for negative emotion. Both scales were internally consistent, α for positive regulation strategies = .78, $p < .01$; α for negative regulation strategies = .80, $p < .01$. The two indices were moderately correlated, $r = .41$, $p < .01$, but as expected, participants reported regulating their negative emotions more than their positive emotions, $M = 22.08$ versus $M = 16.17$, $t(51) = 9.18$, $p < .01$.

Procedure

Participants attended three laboratory sessions. During the first session, participants were introduced to the study as an investigation of how college students think and feel about their daily life experiences. Participants completed a series of questionnaire measures during the first session. Next, participants were asked to keep a detailed record of their most intense emotional experience for a 14-day period. Participants were given detailed procedures for completing the diaries, and all items on the diary form were carefully defined. In addition to oral instructions, participants received written instructions to which they could refer during the course of the study. Participants took home a practice diary, along with another set of questionnaire measures, including the regulation questionnaire. During the second laboratory session, participants returned their completed questionnaires, and reviewed their practice diary with the experimenter. Participants were then given 14 days worth of diaries. They returned their diaries three times during each recording week, and received extra lottery tickets for returning their forms on time. Participants who did not return their forms on time were telephoned within 24 hours and reminded to return the forms. During the third laboratory session, the experimenter interviewed participants about their reactions to the study. Participants indicated whether they had completed any diaries from memory and, if they had, the percentage of forms that they had completed from memory. The experimenter stressed that participants would not be penalised in any way (i.e., they would still receive credit and lottery tickets) if they had not followed instructions, and that we were simply interested in obtaining an accurate picture of their data.

RESULTS

We hypothesised that emotion differentiation should be related to emotion regulation, particularly for negative emotions, and for those who have a propensity to experience intense emotional states. To test this hypothesis, we regressed the emotion regulation indices onto emotion differentiation, emotion intensity, and their cross-product using ordinary least squares (OLS) multiple regression procedures. One analysis was conducted using the negative emotion indices (negative emotion differentiation and regulation), and one used the positive emotion indices (positive emotion differentiation and regulation). All predictor variables were centred (Aiken & West, 1991).

Negative emotion differentiation

As predicted, individuals with more highly differentiated and more intense negative emotional experience reported greater emotion regulation. The negative differentiation—intensity cross-product term was significantly related to the negative regulation strategy index, $b = -8.47$, $B = -.34$, $t = 2.34$, $p < .02$, indicating that greater negative emotion differentiation was associated with greater emotion regulation, especially as emotion intensity increased. This means that individuals who had smaller correlations among negative emotional states, indicating more differentiation, reported more frequent regulation of negative emotions using a range of strategies. This was particularly true for individuals who both differentiated among emotions and experienced relatively intense emotions.

In addition, the negative emotion differentiation term was significantly related to the negative regulation index, $b = -5.90$, $B = -.40$, $t = 2.75$, $p < .01$. In regression equations with interaction terms in which the predictor variables have been centred, the lower order regression coefficients are not main effects, but instead represent the effect of the predictor on the criterion at the mean of the other predictor variable. Thus, those individuals at an average level of emotional intensity and who had smaller correlations among negative states, indicating more differentiation, also reported more frequent negative emotion regulation using a range of strategies than did those with larger correlations between negative emotional states. The emotional intensity term was significantly related to the negative regulation index ($b = 2.76$, $B = .31$, $t = 1.96$, $p < .05$), indicating that individuals at an average level of negative differentiation and who evidenced intense emotional states reported more frequent negative emotion regulation than did those with less intense emotional states.

The relations among negative differentiation, intensity, and emotion regulation are graphically presented in Figure 1. Figure 1 shows the simple regression lines for the association between negative emotion differentiation and emotion regulation at one standard deviation below, at the mean, and one standard deviation above the mean of intensity (Aiken & West, 1991). As predicted, those low in granularity (with large correlations between ratings of negative emotional states) did not differ in their regulation by intensity. Those high in differentiation (with small correlations between negative emotional states) reported increased emotion regulation as the intensity of their experience increased.

Positive emotion differentiation

As predicted, positive emotion differentiation was unrelated to emotion regulation. Neither positive emotion differentiation, nor the intensity-differentiation cross-product were significantly related to the positive emotion regulation strategy index ($b = -2.63$, $B = -.19$, $t = 1.34$, $p < .19$, and $b = 2.89$, $B = .12$, $t =$

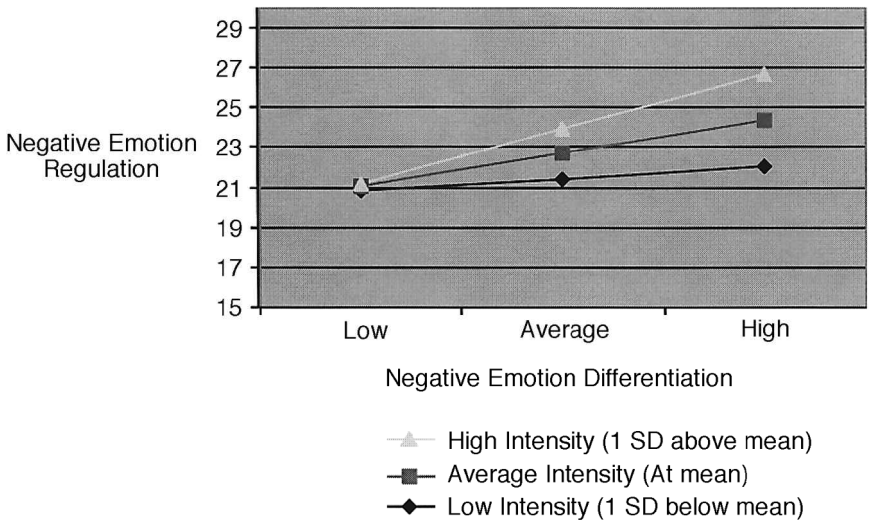


Figure 1. Simple Regression Lines for the Association Between Negative Emotion Differentiation and Emotion Regulation at Different Levels of Emotional Intensity. Negative emotion differentiation is indexed as one standard deviation below the mean (high differentiation), at the mean (average differentiation), and one standard deviation above the mean (low differentiation), of the average correlation between negative emotion ratings.

0.80, $p < .43$, respectively). Emotional intensity was significantly related to the regulation strategy index for individuals who evidenced an average level of positive emotion differentiation ($b = 3.67$, $B = .39$, $t = 2.60$, $p < .01$), indicating that individuals characterised by intense emotional experience reported using a greater number of emotion regulation strategies.

DISCUSSION

Although it has been argued previously that awareness of affective experience is likely related to emotion regulation and self-regulation in general (Swinkels & Giuliano, 1995), the present study provides the first empirical evidence, to our knowledge, that characteristics of represented emotional experience is related to emotion regulation. As predicted, individual differences in the propensity to label negative emotional experiences in a discrete and granular fashion were associated with increased negative emotion regulation by using a range of strategies, particularly for those individuals who experience their emotion at greater intensity. Positive emotion differentiation was not related to any of the regulation variables.

This study is important on several counts. First, it replicates previous studies indicating there is great variability in the representation of emotional experiences as discrete (Feldman, 1995; Feldman Barrett, 1998) and verifies that this variation is related to other aspects of emotion life. Second, it indicates that emotion

regulation must be considered separately for positive and negative emotion. This is likely because negative emotions are more heavily regulated in our current cultural context. Global measures of emotion regulation (i.e., a strategy index that did not separate positive and negative emotion, as well as broad statements about emotion regulation more generally) were not related to emotional differentiation in the present study. By extrapolation, it would be interesting to see whether emotional differentiation is more strongly related to those specific negative emotions that are more highly regulated (e.g., anger) when compared to those negative emotions that are not modified as frequently (e.g., sadness).

These findings are consistent with two broad perspectives in the emotion literature. First, they are consistent with an affect-as-information perspective. According to that perspective, specific emotional states have more adaptive value than global affective states, in part, because experiences of specific, differentiated emotional states are less subject to misattribution errors (Clore & Parrott, 1991; Keltner, Locke, & Audrain, 1993; Schwarz, 1990; Schwarz & Clore, 1996). One of the principal distinguishing features of a discrete emotional state, in comparison to a global affective state, is that emotions are typically associated with a causal object, whereas global affective states are not (affect is, of course, caused, but an object is not attributed to the feeling state; Russell & Feldman Barrett, 1999). Identification of the source of an emotional state has important consequences (Johnson, Hashtroudi, & Lindsay, 1993; Johnson, Nolde, & De Leonardi, 1996). This study has reinforced this claim by showing that emotion differentiation is correlated with emotion regulation.

Second, our findings are consistent with an emotional intelligence perspective. Emotional intelligence is broadly defined as the ability to perceive emotions in self and other, to reflectively regulate emotions, and to access and generate emotional experiences to inform adaptation (Salovey & Mayer, 1990; Salovey & Sluyter, 1997). Recently, the concept of emotional intelligence has come under scrutiny, with some researchers claiming that the construct does not have validity (Davies, Stankov, & Roberts, 1998). Taken together, however, emotion differentiation and the aspects of emotion regulation assessed in the present study seem to comprise two important components of the emotional intelligence concept, and in the process support its validity (Feldman Barrett & Gross, 2000). Those individuals with the ability to distinguish among negative emotional states and subsequently regulate their emotions may prove more "emotionally intelligent" than those who have less differentiated emotion representations.

Limitations

One important caveat is that the analyses presented in this study were correlational, and therefore no causal connection between emotion differentiation and emotion regulation can be assumed. The findings are certainly consistent with the hypothesis that emotion differentiation sets the stage for emotion regulation,

but they do not conclusively demonstrate this. It is also possible that more frequent emotion regulation allows for finer grained differentiation. Indeed, participants reported emotional experiences in their daily diaries that could have been the result of, rather than the input to, regulatory attempts. Individuals who are well-practised at emotion regulation may experience the automatic activation of a rich network of semantic and affective representations (comprised of both linguistic labels and organised personal experiences) that are easily accessible due to repeated use. Such individuals may be able to easily represent their emotional experience in a finely differentiated way without effort or intent.

Future directions

These findings suggest a number of interesting next steps. First, it will be important to replicate the differentiation-regulation relationship both with a broader range of participants (other than healthy college students) and using experimental methodology (by manipulating emotion differentiation and examining the impact of such manipulations on emotion regulation ease and success). Second, it would be important to determine whether emotion differentiation is related to regulation efficacy (i.e., to more adaptive use of regulation strategies). Our focus in this report was on emotion regulation frequency, but in future studies, it will be important to assess whether emotion differentiation is reliably associated with the use of particular emotion regulation strategies. Third, it would be important to consider whether the differentiation-regulation link occurs only for consciously mediated states, or whether it also exists for automatically generated and regulated states. Finally, it would be important to develop and extend this view to develop a broader conceptualisation of the processes that link emotional differentiation to emotion regulation. The current findings are consistent with the view that both emotion differentiation and emotion regulation are influenced by a combination of accessible emotion knowledge (as evidenced by differentiation in conscious emotional experience) and the motivation to use that knowledge (as evidenced by the propensity to experience intense emotional states). The differentiation-regulation link also may be due to underlying differences in the availability of complex emotion knowledge, as well as the cognitive resources to use the knowledge in any given instance (Feldman Barrett & Gross, 2000).

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