Baseline Affective Experiences and Valence Asymmetry in Emotional Differentiation

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Introduction

Oftentimes, it is easier to find the words to describe our negative emotions. When facing a loss of a close friend or family member, we are quick to identify our negative feelings as sadness. After getting cut off in rush hour traffic, we swiftly recognize our feelings as anger. Whereas we experience each negative emotion as unique and precise, we are far less likely to identify positive emotions in this manner. For instance, both a promotion at work and feeling a connection with a beloved family member cause us to feel happy. We are less likely to describe these positive emotions as, specifically, feelings of accomplishment or love.

The ability to experience emotions as specific and discrete is known as "emotion differentiation" and is thought to be critical for survival and functioning. This is particularly evident for negative emotions. For instance, the experience of fear, but not anger, or general negativity, is associated with aversion to risk that might help individuals steer clear of danger (Lindquist & Barrett, 2008). The Appraisal-Tendency Framework (ATF) provides a basis for determining the role discrete emotions play in decision-making and judgment. ATF posits that each discrete emotion has unique motivational properties that impact cognitive appraisals and subsequent decision-making and judgment (Lerner & Keltner, 2000, 2001). Anger, in particular, has been shown to serve as a buffer against indecision and can overcome risk aversion (Lerner & Tiedens, 2006). These findings have important implications for policy, in particular, public health campaigns. (Han, Lerner, & Zeckhauser, 2010). Moreover, people who are better at experiencing their emotions as highly differentiated and specific are less likely to allow the effects of

incidental negative emotions, such as disgust, to influence their moral judgments (Cameron, Doris & Payne, 2013).

Indeed, experiencing negative emotions as highly differentiated confers multiple benefits for well being. Research shows that people with greater levels of emotion differentiation and more intense negative emotional experience also report greater emotion regulation (Barrett, Gross, Christensen, & Benvenuto, 2001). Emotion regulation, as referred to here, is the ability to monitor and adjust our emotional reactions. This can be automatic, conscious or unconscious, and may occur at various stages in the emotion construction process. People may regulate both positive and negative emotions, by either increasing or decreasing levels of emotion (Gross & Thompson, in press). Emotion differentiation is positively related to emotion regulation. This means that individuals with highly differentiated emotional experiences are more skilled in emotion regulation (Barrett et al., 2001). Consistent with this finding, various forms of mood-related psychopathologies are associated with a decrease in emotion differentiation (Demiralp et al. 2012; Selby et al. in press).

To date, the majority of evidence has focused on the benefits of experiencing discrete and specific negative emotions, but there is also evidence that discrete positive emotions are important. The *find-remind-and-bind* theory of gratitude identifies gratitude as serving an important evolutionary function in strengthening relationships between responsive partners. Gratitude aids in the signaling of reciprocal relationship norms that may lead to increased mutual responsive behavior between partners (Algoe, 2012). The experience of awe has been linked to

perception of time. For instance, people who were induced to experience awe, as opposed to happiness, felt they had more time available and were less impatient (Rudd, Vohs, & Aaker, 2012).

Less research to date has explored the role of positive emotion differentiation, but it is hypothesized that the inability to adequately distinguish positive emotions could hinder resource accrual in the long-term (Barrett et al., 2001). Resource accrual is the collection of social, psychological, and physical tools that help an individual thrive. The ability to experience positive emotions as highly differentiated allows individuals to more effectively cope with stressful situations and use a broadened range of actions when problem-solving (Tugade, Fredrickson, & Barrett, 2004). Individuals with higher emotion differentiation are less likely self-distract and are more actively engaged in the coping process. They also are more likely to use a proactive and "future-oriented" coping style, which is believed to be a result of more thorough information processing (Tugade, Fredrickson, & Barrett, 2004).

The existing evidence clearly suggests that there are benefits associated with greater differentiation of both negative and positive emotions, and yet recent research demonstrates a valence asymmetry in emotion differentiation. Individuals differentiate more for negative emotions than for positive emotions (Rice & Lindquist, 2013), but no research has addressed the mechanisms behind this valence asymmetry or its consequences. The purpose of this study is thus to assess one possible mechanism behind the valence asymmetry in emotion differentiation.

The conceptual act theory of emotions (Barrett, 2006; Lindquist, 2013) may help explain why individuals better identify negative emotions despite the greater frequency of positive emotions. The conceptual act theory of emotions posits that emotions are psychological events constructed from core affect and conceptual knowledge. For example, research finds that people experience fear when their conceptual knowledge about fear combines with the perceived feelings of unpleasantness (Lindquist & Barrett, 2008). The same process is involved in the experience of discrete positive emotions, such as gratitude. Therefore, individuals may thus be more likely to make meaning of their negative emotions using conceptual knowledge about emotion (Lindquist & Barrett, 2008a) because negative emotions are less frequently experienced and thus more salient or attention-grabbing. *Negativity Bias* is the idea that a negative outcome garners more attention and is experienced with more intensity than a comparable positive outcome (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001).

Research has shown that positive emotions occur more often than negative emotions within psychologically healthy individuals (Cacioppo, Gardner, & Berntson, 1999). *Positivity Offset* is used to describe the probability that most moments in an individual's life are experienced as at least mildly positive. This holds true universally, even for people in very difficult circumstances (Fredrickson, 2013). Regardless of age, socioeconomic or marital status, employment, cultural background, or disabilities, the majority of Americans rate themselves as having a positive subjective wellbeing, meaning that they view themselves as happy (Diener & Diener, 1996). This trend holds true cross-nationally, with the exception of

citizens of the most impoverished countries (Diener & Diener, 1996). The proposed study will look at one of the potential mechanisms underlying increased emotional differentiation for negative emotions. The hypothesis of the current study is that individuals will experience greater differentiation for any type of valenced state (degree of negativity or positivity) that is a shift from their baseline. To test this hypothesis, this research examined the impact of positive or negative affect induction on differentiation for positive or negative emotions.

Participants were first induced to experience an affective state that would mimic their "baseline" affective state through the use of either positive or negative images and music. Participants partook in either positive or negative emotion inductions. Next, to mimic a shift in affective experience, participants viewed a series of either positive or negative evocative stimuli from the International Affective Picture System (IAPS) and rated these images on 14 different emotions (7 positive; 7 negative). Differentiation was computed as the average intraclass correlation (ICC) between same-valence emotions. In this 2 (baseline: positive v. negative) X 2 (differentiation task: positive v. negative design), I predicted that participants who were first induced to experience positive affect would label subsequent negative states more precisely than participants who were induced to experience positive affect and then encountered positive states. This finding would mimic the valence asymmetry in granularity that we have observed elsewhere (Rice & Lindquist, 2013). Yet I also predicted that participants who were first induced to experience negative affect would label subsequent positive states more precisely than participants who were induced to experience negative affect and then

encounter negative states. This is because experiencing negative emotion prior to encountering positive states makes the positive state more salient, causing participants to be more likely to access and use conceptual knowledge to discretely label and experience an instance of pleasant emotion.

Method

Participants

The participants in this study included 128 undergraduate students enrolled in an introductory psychology course at the University of North Carolina. The average age of participants was 18.97 years old. The sample was 70.3% female and 29.7% male. Additionally, 75% of participants indentified as Caucasian, 12.5% as African American, and 10.2% as Asian American. Participants were compensated for their time with partial fulfillment of a course requirement.

Materials

Baseline Induction

The baseline affect induction consisted of a Quicktime video approximately 3 minutes in length that included a series of images gathered from the International Affective Picture System (IAPS) played with classical music. The affect induction was identical to that used in previous research (Lynn, Zhang, & Barrett, 2012). There were two different versions of the Quicktime videos: one containing positive images and music and one containing negative images and music. This induced

participants to experience either a positive or negative emotional state at the start of the study.

Affect Grid

The affect grid was used to assess how participants were feeling following the baseline affect induction. The grid consisted of two dimensions of valence (ranging from pleasant to unpleasant feelings) and arousal (ranging from high to low activation feelings). Participants checked the box along the grid that best matched how they were feeling at the moment based on those two dimensions.

Differentiation Task

In the differentiation task, participants viewed a series of either positive or negative evocative stimuli from the International Affective Picture System (IAPS) displayed for three seconds. Using a 7-point scale, participants rated each image on seven positive (grateful, loving, proud, awe, excited, amused, happy) and seven negative emotion adjectives (angry, bored, downhearted, guilty, disgusted, afraid, sad) after the images are shown on the screen. This task was designed and presented in E-Prime software (PST Software).

Range and Differentiation of Emotional Experiences Scale (RDEES)

This scale evaluates the extent to which individuals characterize themselves as experiencing a broad range of emotion with subtle distinctions between each of these states. Examples from this scale include: “I experience a wide range of emotions” and “I am aware of the subtleties between feelings I have” (Kang & Shaver, 2004). This allowed participants to characterize their own emotional complexity.

Toronto Alexithmyia Scale-20 Item Scale

This scale is the most commonly used measure to assess for alexithmyia, difficulty identifying emotional states and describing those emotions. TAS-20 has three subscales: Difficulty Describing Feelings (5 items), Difficulty Identifying Feeling (7 items), and Externally-Oriented Thinking (8 items). Examples from this scale are "It is difficult for me to find the right words for my emotions" and "I find examination of my feelings useful in solving personal problems" (Bagby, Parker, & Taylor, 1994).

Procedure

The proposed study employed a 2 (baseline induction: positive, negative) X 2 (differentiation task: positive, negative) between-subjects factorial design. Participants were randomly assigned to one of the four conditions.

Participants who provided informed consent began the study by reading a set of instructions describing the task. Then, they completed the baseline induction that corresponded to their assigned condition. Following the induction, the participants indicated their current affective state in terms of valence and arousal using the affect grid. Next, participants completed the differentiation task. Participants viewed a series of either positive or negative evocative stimuli for three seconds each from the International Affective Picture System (IAPS). Then they rated these images on sixteen emotion adjectives as the images were shown on the screen on a 7-point scale. Differentiation was computed as the average intra-class correlation (ICC) between same-valence emotions with greater differentiation indicated as lower average ICCs.

After completing the main task, participants responded to a series of scales presented through Qualtrics that will not be discussed further in this report, including the Range and Differentiation of Emotion Questionnaire (Kang & Shaver, 2004) and Toronto Alexithmyia Scale-20 Item Scale (Bagby, Parker, & Taylor, 1994). Participants also provided basic demographic information, including age, gender, and ethnicity. Last, they read a debriefing statement, which described the study and provided participants with additional resources.

Results

First, a one-way ANOVA was conducted to compare the affect grid rating of valence across baseline induction condition to see if the affect induction was effective. For the purpose of this analysis, only participants' rating of emotional valence (from pleasant to unpleasant) was examined in relation to the corresponding affect induction. Results showed that, according to the manipulation check, the baseline induction was effective at getting participants into the expected affective state, F (1, 123) = 441.04, $p < .001$.

As in previous research, granularity was computed as the average intraclass correlation (ICC) between same-valence emotions. (Tugade, Fredrickson, & Barrett, 2004). The ICC represents the way people cluster together same valence-emotions across trials. Higher correlations correspond to less differentiation. Values of ICCs are between 0 and 1. Subjects with negative ICCs were excluded from further analyses as this value is invalid. Removing these individuals is conservative as a negative ICC indicates that the true ICC is likely to be low.

To test my primary hypothesis that individuals will experience greater differentiation for any type of valenced state that is a shift from their baseline, I submitted ICCs to a two-way between-subjects ANOVA. I also expected that participants who were first induced to experience negative affect would label subsequent positive states more precisely than participants who were induced to experience negative affect and then encountered negative states. The two-way between-subjects ANOVA was used to examine the relationship between the independent variables of induction valence and assigned granularity task and their interaction in influencing subsequent ability to discretely label emotions. Of the 128 participants, 29 were excluded from further analysis. As noted previously, participants with invalid ICCs were excluded as well as participants who failed to follow the experimental procedure. These measures were taken to ensure that participants included in analysis understood the task and responded appropriately.

Contrary to our predictions, there was no significant interaction between induction valence and valenced granularity, F (1, 99) = 0.45, p > .5. There was no main effect of induction valence, F (1, 99) = 1.09, p > .29. However, there was a significant main effect of stimulus type, F (1, 99) = 8.33, p < .005, such that participants differentiated among their emotions more when rating negative states (M = .48, SE = .036) than when rating positive emotions (M = .63, SE = .035). This finding replicated the valence asymmetry observed in previous research (Rice & Lindquist, 2013).

Discussion

To determine whether contrast from affective baseline is one reason why people habitually differentiate more among negative states, I manipulated participants' affect state and then presented them with stimuli of the same or contrasting valence. Although, I replicated the valence asymmetry found in previous studies, my results did not support the prediction that people differentiate more among valenced states that are a contrast from baseline.

There are a few possible reasons for why my results were not consistent with my hypotheses. Although the affect induction proved to be effective, it is possible that the manipulation was not strong enough to carry over and influence performance on the differentiation task. Additionally, we cannot be certain that effects of the induction lasted throughout later tasks. Participants who were induced to experience a negative affective baseline state were, on average, rated themselves using the affect grid as being in a congruent state. This trend was also found for the positive induction, meaning that participants who were induced to experience a positive affective baseline state did indeed report being in a pleasant state. We expected that those participants who then partook in an asymmetrically valenced differentiation task would be better at discretely labeling their emotions than participants who then completed a differentiation task of the same valence as the induction. However, this was not the case. Future studies might therefore continue to play negative or positive music, for instance, as individuals complete the differentiation tasks to keep individuals in the baseline state.

In particular, the tendency to label negative emotions with more precision than positive emotions, remained true across conditions. It is possible that this effect is too strong to be overridden by a basic affect induction. As noted earlier on, there are several theoretical perspectives on why individuals differentiate more for negative emotions. The conceptual act theory of emotions (Barrett, 2006; Lindquist, 2013) explains the construction of emotions as the combination of core affect and conceptual knowledge. For example, fear is experienced when conceptual knowledge about fear combines with general unpleasant feelings. Negative emotions are more salient or attention grabbing according to the *Negativity Bias* (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). For these reasons, it may be that people are more likely to make sense of their negative emotions using their conceptual knowledge of emotions and are therefore better at identifying the negative emotions they experience (Lindquist & Barrett, 2008a). Additionally, in psychologically healthy individuals, positive emotions occur with greater frequency than negative emotions (Cacioppo, Gardner, & Berntson, 1999). In fact, most events are at least slightly positive according to the *Positivity Offset*. This holds true universally, even despite the most difficult circumstances (Fredrickson, 2013). It is thus possible that our laboratory induction was not sufficient to alter the negativity bias and positivity offset that individuals have learned over time and experience in daily life.

Future studies should consider including a more intense affect induction or measures to ensure participants stayed in the correct affective state during subsequent tasks. One way to go about this would be programming randomly

occurring prompts to complete affect grids throughout the differentiation task in E-Prime. This would allow for a more accurate gauge of whether the affect induction remained effective throughout the differentiation task. Additionally, this measure would also help show if and when the asymmetrically valenced pictures in the differentiation task altered affective states of participants. Future studies could also attempt to incentivize accurate performance so that participants are more compelled to cognitively invest in the experiment. It would also be useful to examine the way emotions are labeled in response to real life events. When directly applied to themselves, it is possible that individuals would differentiate more. For example, would the emotions resulting from receiving a promotion at work be experienced as more discrete after having an exceptionally bad day? This would be difficult to manipulate for an experiment, but correlational data could be obtained through self-report measures in the form of a daily log.

The effects of contrast from affective baseline on emotion differentiation remain unclear. It could still be the case that valence asymmetry from affective baseline does cause individuals to differentiate more among their emotions. Further research is needed to fully assess this hypothesis. Additionally, there is an alternative hypothesis that needs to be considered. The experience of positive emotions is associated with a broadened state of consciousness and more global thinking. Global thinking is linked to less specific and precise cognitions (Fredrickson, 2013). It could thus be that positive emotions are inherently experienced as less discrete and are subsequently labeled more broadly.

The ability to differentiate between emotions has important implications on survival as well as daily functioning. Though we are usually more adept at attributing labels to negative emotions, identifying all kinds of emotional experiences conveys benefits. Discrete negative emotions are associated with avoiding danger, overcoming indecision, and overriding the status quo. The experience of discrete positive emotions is linked with increased patience, altered perception of time, and the fostering of mutually beneficial relationships. The next time you experience a positive state, consider if you are just feeling generally happy or if it is actually more complex. You might just find that you are encountering awe, pride, contentment, joy, or excitement.

References

Algoe, S. B. (2012), Find, Remind, and Bind: The Functions of Gratitude in Everyday Relationships. Social and Personality Psychology Compass, 6: 455–469. doi: 10.1111/j.1751-9004.2012.00439.x

Barrett, L., Gross, J., Christensen, T., & 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*(6), 713-724. doi: 10.1080/02699930143000239

Bagby, R.M., Parker, J.D.A. & Taylor, G.J. (1994). The twenty-item Toronto Alexithymia Scale– I: Item selection and cross-validation of the factor structure. *Journal of Psychosomatic Research, 38*, 23-32.

Baumeister, R.F., Bratslavsky, E., Finkenauer, C., & Vohs, K.D. (2001). Bad is stronger than good. *Review of General Psychology, 5*, 323-370.

Cacciopo, J., Gardner, W., & Berntson, G. (1999). The affect system has parallel and integrative processing components form follows function. *Journal of Personality and Social Psychology*, *76* (5), 839-855.

Cameron, C.D., Payne, B.K., & Doris, J.M. (2013). Morality in high definition: Emotion differentiation calibrates the influence of incidental disgust on moral judgments. *Journal of Experimental Social Psychology*. Doi: 10.1016/j.jesp.2013.02.014.

Demiralp, E., Thompson, R.J., Mata, J., Jaeggi, S.M., Buschkuehl, M., Barrett, L.F.,

Ellsworth, P.C., Demiralp, M., Hernandez-Garcia, L., Deldin. P.J., Gotlib, I.H., & Jonides, J. (2012). Feeling blue or turquoise? Emotional differentiation in major depressive disorder. *Psychological Science, 23* (11), 1410-1416.

Diener, E., & Diener, C. (1996). Most people are happy. *Psychological Science*, *7* (3), 181-185.

Fredrickson, B.L., & Losada, M. (2005). Positive affect and the complex dynamics of human flourishing. *American Psychologist*, *60*(7), 678-686. doi: 10.1037/0003-066X.60.7.678

Fredrickson, B. L. (2013, July 15). Updated Thinking on Positivity Ratios. *American Psychologist*. Advance online publication. doi: 10.1037/a0033584

Gross, J.J., & Thompson, R.A. (in press). Emotion regulation: Conceptual foundations. In J.J. Gross (Ed.), Handbook of emotion regulation. New York: Guilford Press.

Han, S., Lerner, J.S., & Zeckhauser, R. (2010) Disgust promotes disposal: Souring the status quo. *Journal of Risk and Uncertainty, 44*(2):101-113.

Kang, S., & Shaver, P. R. (2004). Individual differences in emotional complexity: Their psychological implications. *Journal of Personality, 72*, 687-726.

Lerner, J. S., & Keltner, D. (2000). Beyond valence: toward a model of emotion specific influences on judgment and choice. *Cognition and Emotion, 14* (4), 473–493.

Lerner, J. S., & Keltner, D. (2001). Fear, anger, and risk. *Journal of Personality and Social Psychology, 81* (1), 146–159.

Lerner, J.S., Tiedens, L.Z. (2006). Portrait of the angry decision maker: How appraisal

tendencies shape anger's influence on cognition. *Journal of Behavioral Decision Making (Special Issue on Emotion and Decision Making), 19*:115-137.

Lindquist, K.A., & Barrett, L.F. (2008a). Constructing emotion: The experience of fear as a conceptual act. *Psychological Science, 19,* 898-903.

Lindquist, K.A., & Barrett, L.F. (2008b). Constructing emotion: The experience of fear as a conceptual act. *Psychological Science, 19,* 898-903.

Lynn, S. K., Zhang, X., & Barrett, L.F. (2012). Affective state influences perception by affecting decision parameters underlying bias and sensitivity. *Emotion, 12*, 726-736.)

Rudd, M., Vohs, K.D., Aaker, J. (2012). Awe expands people's perception of time, alters decision making, and enhances well-being. *Psychological Science, 23* (10), 1130-1136.

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*.

Silvia, P. J. (2001). Interest and interests: The psychology of constructive capriciousness. *Review of General Psychology, 5*, 270–290.

Tugade, M., Fredrickson, B., & Barrett, L. (2004). Psychological resilience and positive emotional granularity: Examining the benefits of positive emotions on coping and health. *Journal of Personality*, *72*(6), 1161-1190. doi: 10.1111/j.1467-6494.2004.00294.