

Positive emotion dispositions differentially associated with Big Five personality and attachment style

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Abstract

Although theorists have proposed the existence of multiple distinct varieties of positive emotion, dispositional positive affect is typically treated as a unidimensional variable in personality research. We present data elaborating conceptual and empirical differences among seven positive emotion dispositions in their relationships with two core personality constructs, the “Big Five” and adult attachment style. We found that the positive emotion dispositions were differentially associated with self- and peer-rated Extraversion, Conscientiousness, Agreeableness, Openness to Experience, and Neuroticism. We also found that different adult attachment styles were associated with different kinds of emotional rewards. Findings support the theoretical utility of differentiating among several dispositional positive emotion constructs in personality research.

Keywords: *Emotion; positive emotion; positive psychology; personality; Big Five; attachment*

Introduction

Philosophers and writers have long debated the nature of happiness, reaching a wide range of conclusions, but never a consensually accepted definition. Recently scientists have joined this enterprise, creating a flourishing line of inquiry: a Psycinfo search for “happiness” now yields over 4,500 citations. But what is happiness? Reducing positive emotion to this single construct has proved to be a common empirical practice. Within the field of emotion, many studies have not considered possible distinctions among positive emotions (e.g., Davidson, 1993; Ekman et al., 1987; Isen, Niedenthal, & Cantor, 1992; Levenson, Ekman, Heider, & Friesen, 1992; although see Fehr & Russell, 1984; Shaver, Morgan, & Wu, 1996; Smith & Ellsworth, 1988). Within personality research, there is also a pronounced emphasis on dispositions toward global positive and negative affect or mood, rather than the frequency and intensity of experiencing particular emotion states (Larsen & Ketelaar, 1989; Pervin, 1993; Watson, Clark, & Tellegen, 1988).

Several theorists, however, posit the existence of multiple positive emotions (Ekman, 1994; Fredrickson, 1998; Lazarus, 1991; Panksepp, 1998;

Shiota, Campos, Keltner, & Hertenstein, 2004). In the present investigation we explored distinctions among the major personality correlates of several corresponding positive emotion dispositions. Prior studies have documented robust relationships between global positive affect and the Big Five trait Extraversion, as well as secure adult attachment style (e.g., Costa & McCrae, 1980; Gross, Sutton, & Ketelaar, 1998; McCrae & John, 1992; Simpson, 1990; Torquati & Rafaelli, 2004; Watson & Clark, 1997). We sought to document relationships between several distinct positive emotion dispositions, the Five Factor Model personality traits, and attachment styles, asking whether these relationships show greater differentiation than suggested by earlier research.

Positive affect and the Big Five

One of the most robust findings in the literature on affect and personality is the strong correlation between dispositional global positive affect and the Big Five factor Extraversion (e.g., Costa & McCrae, 1980; Gross, Sutton, & Ketelaar, 1998; John, 1990; Larsen & Ketelaar, 1989; McCrae & John, 1992;

Watson & Clark, 1997; Wilson & Gullone, 1999). Extraversion scores predict frequency and intensity of felt positive emotion, as well as reactivity to positive feedback (Bachorowski & Braaten, 1994; Larsen & Ketelaar, 1989; Meyer & Shack, 1989; Watson & Clark, 1997; Wilson & Gullone, 1999). In a study of responses to humorous film clips, Extraversion scores significantly predicted absolute level of positive emotion and degree of increase in positive emotion during viewing, suggesting that Extraversion involves both positive emotion baseline and reactivity (Gross, Sutton, & Ketelaar, 1998).

Based on these findings, theorists have variously concluded that that Extraversion “predisposes individuals toward positive affect” (Costa & McCrae, 1980, p. 673), that positive affect forms the core of Extraversion (Hogan, 1983; Watson & Clark, 1997; Wiggins, 1979), or that individual differences in the activity of a neurological reward system provide the foundation for both (e.g., Carver & White, 1994; Depue & Iacono, 1989; Gray, 1970; Watson & Clark, 1997). Relationships between global positive affect and the rest of the Big Five are less well established. Although global positive affect is predicted most strongly by Extraversion, McCrae and Costa (1991) found that it is also independently related to the other Big Five factors: Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience. The mechanisms behind these relationships are less well articulated.

In research on Big Five correlates of positive affect, the latter variable is often measured using the Positive Affect scale of the Positive And Negative Affect Schedule (PANAS-PA; Watson et al., 1988). The 10 items of the PANAS-PA illustrate the distinction between dispositional positive *affect*, the subject of previous Big Five studies, and dispositional positive *emotion*, the subject of the present study: enthusiastic, interested, determined, excited, inspired, alert, active, strong, proud, and attentive. The PANAS-PA scale was designed to measure overall high energy and pleasurable engagement with the environment (Watson et al., 1988). A frequent use of the PANAS-PA is in the measurement of positive aspects of psychological well-being (e.g., Adler & Fagley, 2005; Isaacowitz, 2005; MacLeod & Conway, 2005), a purpose to which it is admirably suited. However, several PANAS-PA items measure constructs that would not be considered emotions by most theorists (e.g., determined, alert), and several varieties of positive emotion that have received increasing attention from researchers are not represented (e.g., contentment, love, amusement). Recognizing this distinction, the authors of the PANAS have since renamed the instrument the Positive and Negative *Activation* Schedule (Watson, Wiese, Vaidya, & Tellegen, 1999).

There are hints in the empirical literature that different aspects of positive affect are differentially associated with various Big Five factors. For example, Watson and Clark (1992) replicated McCrae and Costa’s primary finding that global positive affect was best predicted by Extraversion, but also found differentiation in predicting more specific positive affect outcomes. Extraversion accounted for the most variability in joviality, somewhat less in self-assurance, and considerably less in attentiveness. Agreeableness was a significant predictor of joviality and self-assurance, even after the effects of Extraversion had been controlled, but not of attentiveness. Conscientiousness predicted attentiveness more strongly than did Extraversion. Neuroticism only consistently predicted self-assurance. Although few emotion theorists would consider self-assurance and attentiveness to be emotions per se, these findings do encourage looking more closely at specific relationships between various positive emotion dispositions and the Big Five. Does Extraversion facilitate dispositional experience of all positive emotions equally, or does it facilitate some more than others? Can the independent associations of the other four Big Five factors with positive affect be explained in terms of distinct correlations with particular positive emotion dispositions? Addressing these questions was the first aim of the present study.

Positive affect and adult attachment style

The second aim of the present study was to assess the relationships between several specific positive emotion dispositions and adult attachment style in the context of romantic relationships. Adult attachment style has profound implications for emotional experience, because the internal working models of self and other that underlie attachment style help organize emotional responses to events in the social and material environment (Fraley & Shaver, 2000; Griffin & Bartholomew, 1994; Hazan & Shaver, 1987). Adults tending toward secure attachment styles have positive working models of their own desirability and worth in relationships, as well as of others’ trustworthiness and support. Secure attachment provides the psychological foundation for exploring the material environment and taking advantage of new opportunities, as well as enhancing the experience of close relationships (Ainsworth, 1982; Bowlby, 1979). Adults tending toward attachment anxiety are less confident about their own value as relationship partners, and are more vigilant for signs of betrayal or abandonment (Fraley & Shaver, 2000). Adults tending toward attachment avoidance are less convinced of the value of intimate relationships, and generally avoid getting close to others. Some studies suggest that

attachment-avoidant individuals have suppressed their attachment systems, so that separation distress is no longer a threat (e.g., Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993), although other studies suggest that this suppression requires constant maintenance, collapsing under high cognitive load (Mikulincer, Birnbaum, Woddis, & Nachmias, 2000). Increasingly, attachment researchers have recognized that attachment anxiety and avoidance are best thought of as orthogonal continua, rather than distinct types (e.g., Fraley & Shaver, 2000; Griffin & Bartholomew, 1994). In categorical terms, adults low on both anxiety and avoidance as described as “secure,” adults high on attachment anxiety but low on avoidance as “preoccupied,” those high on avoidance but low on anxiety as “dismissive,” and those high on both anxiety and avoidance as “fearful” (Fraley & Shaver, 2000; Griffin & Bartholomew, 1994).

Prior studies have found that insecure attachment is associated with higher levels of negative affect, especially in the context of romantic relationships (e.g., Feeney & Kirkpatrick, 1996; Simpson, 1990). Insecure attachment style also predicts increased vulnerability to affective disorders, including depression and anxiety (e.g., Hankin, Kassel, & Abela, 2005; Roberts, Gotlib, & Kassel, 1996). However, attachment anxiety and avoidance appear to have different negative emotion correlates. For example, childhood anxious attachment to parents is associated with dispositional fearfulness and shame in adulthood, whereas avoidant attachment to parents is associated with contempt and disgust sensitivity (Magai, Distel, & Liker, 1995). Similarly, adolescent substance abuse and conduct disorder are more closely linked with dismissive attachment style, whereas adolescent affective disorders are associated most closely with preoccupied attachment style (e.g., Kobak, Sudler, & Gamble, 1991; Rosenstein & Horowitz, 1996). These findings suggest that there are differential emotional costs of anxiety and avoidance in attachment.

Less is known about the relationship between attachment style and the experience of positive emotions in adulthood. A few studies have found that securely attached individuals do experience more positive emotion than insecurely attached individuals, particularly in the context of romantic relationships (e.g., Simpson, 1990; Torquati & Raffaelli, 2004). However, prior studies have either failed to differentiate among specific positive emotion dispositions (e.g., joy, contentment, compassion, pride), or have not distinguished between different varieties of insecure attachment. As a result, it is unclear whether attachment anxiety and avoidance are associated with different emotional benefits, as well as costs.

Multiple positive emotion dispositions?

If previous studies of the Big Five and attachment correlates of dispositional positive affect have obscured differences among multiple positive emotion dispositions, what are those differences, and what hypotheses might we have about more specific patterns of association? A review of the positive emotion literature identifies seven distinct positive emotion constructs (Shiota & Keltner, 2005). At the broad, functional level, each of these emotions helps enable the individual to take advantage of opportunities, building or gathering resources that enhance long-term survival and reproductive fitness (Fredrickson, 1998). However, just as specific negative emotions are geared toward enhancing fitness in the face of different kinds of survival and reproductive threats, different positive emotions are geared toward maximizing the response to different kinds of opportunities (Fredrickson, 1998; Shiota et al., 2004). These may not all prove to be discrete emotions using all traditionally established criteria (e.g., Ekman & Davidson, 1994). Also, this is not proposed as a definitive list of the positive emotions. There is growing attention to other distinct positive states with emotional qualities, including hope (Snyder et al., 1996), gratitude (McCullough, Kilpatrick, Emmons, & Larson, 2001), elevation (Haidt, 2003), and interest (Fredrickson, 1998). Rather, this list presents some promising emotion candidates whose fitness-enhancing functions are suggested by converging theory and evidence.

Joy, also sometimes referred to as happiness, refers to the high-arousal emotion felt when the environment signals an imminent improvement in resources, and one must expend energy to acquire that reward (Fredrickson, 1998; Lazarus, 1991). This positive emotion construct has received the most research attention of the seven discussed here, with the most data on corresponding facial expressions (e.g., Ekman et al., 1987), appraisal patterns (e.g., Scherer, 1997), neurological correlates (e.g., Depue & Iacono, 1989), and cognitive effects (e.g., Isen et al., 1992).

Contentment is experienced when one's current resources match or exceed the level of need. This is often experienced following consummatory behavior, or during bodily care activities such as bathing and grooming (Berenbaum, 2002). Fredrickson (1998) describes contentment as a feeling that “prompts individuals to savor their current life circumstances and recent successes,” and facilitates encoding of the behaviors that led to success. Thus, although in humans resources may sometimes be social or psychological in nature, joy and contentment primarily reflect the individual's appraisal of the state of resources in the material

environment, and agency in acquiring and controlling those resources.

Pride is experienced when one succeeds in a socially valued endeavor, enhancing social status within the group and rights to claim group resources (Gilbert, 2001; Hrdy, 1999). Proud behaviors include advertisement of success and high behavioral activation, similar to the displays of status and leadership (Cashdan, 1998; Seidner, Stipek, & Feshbach, 1988; Tiedens, Ellsworth, & Mesquita, 2000; Tracy & Robins, 2004). Pride is a social emotion in the sense that it reflects evaluation of self compared to others (Stipek, 1998), but the primary effect of the display of pride may be to enhance access to material resources. Thus, pride also reflects high environmental agency.

The English term *Love* is used in a wide range of ways, referring to romantic love, familial love, and friendship, as well as love of some material objects (Fehr & Russell, 1984). In the present study, we use the term love to refer to the positive emotional component of Bowlby's attachment behavioral program (Ainsworth, 1982; Bowlby, 1979). Love involves the surge of feeling experienced when one perceives another acting as a reliable and trustworthy caregiver, and submits passively and fully to being the recipient of this care (Sroufe, 1996). Doi (1973) provides a strong description of this construct in his book on the "Japanese" emotion *amae*, although he argues that experience of the emotion is in fact universal.

Compassion, also referred to in the literature as sympathy, is the emotional component of Bowlby's (1979) caregiving system. This emotion is defined by feelings of concern for another's well-being, stimulates nurturant behavior toward offspring and significant others in need, and is elicited by cues of vulnerability, helplessness, cuteness, and distress (e.g., Eisenberg et al., 1989; Estrada, 1995; Hildebrandt & Fitzgerald, 1983). Thus, love and compassion are both primarily emotions that facilitate the development and maintenance of intimate bonds with others.

The final two positive emotion constructs studied here have been described as "epistemological" positive emotions: those that facilitate effective responses to information-related opportunities in the environment (Shiota et al., 2004). These may provide emotional rewards for engaging in particularly useful information-processing tasks.

Amusement, or humor, is felt when one experiences a cognitive shift from use of one knowledge structure to another in the contemplation of a target, as when hearing the punch line of a joke (Latta, 1999). Although this effect has not been explored in detail, initial studies suggest that the experimentally

manipulated experience of amusement facilitates creative thought (Isen, Daubman, & Nowkicky, 1987).

Awe has been defined as the emotion experienced during rapid attempts at cognitive accommodation (Keltner & Haidt, 2003). People experience awe when confronted with a novel, highly complex stimulus that current knowledge structures cannot fully assimilate.

What patterns of correlation might we predict between dispositional experience of these seven emotions and the Big Five? One possibility is that all positive emotion dispositions might be strongly associated with Extraversion, and weakly with the remaining Big Five factors. In light of the positive emotion definitions offered above, however, we hypothesized that joy, contentment, and pride would be most strongly associated with Extraversion, on the grounds that these emotions most centrally involve agentic, goal-oriented behavior given the opportunity for material reward (with contentment following reward acquisition and consumption), and also that Conscientiousness would only be associated with these agency-focused positive emotions. We hypothesized that only emotions facilitating development of long-term social bonds (love and compassion) would be closely associated with Agreeableness, and that only the epistemological positive emotion dispositions (amusement and awe) would be closely associated with Openness to Experience. Analyses of correlations between positive emotion dispositions and Neuroticism were exploratory.

What about attachment style? Individuals with secure attachment styles have high self-efficacy (Mikulincer & Shaver, in press), expect relationships to be loving and supportive (Hazan & Shaver, 1987), and demonstrate more compassionate responses to others' needs than those with insecure styles (Mikulincer et al., 2001). Securely attached participants thus were expected to report greater dispositional joy, contentment, and pride, all of which reflect agency and self-efficacy in goal attainment, as well as love and compassion. Attachment-anxious and preoccupied individuals tend to report feeling intense passion in their romantic relationships, and attempt to attain high levels of intimacy, yet describe romantic partners as untrustworthy, unsupportive, and rejecting (Hazan & Shaver, 1987). They also tend to doubt their own efficacy in dealing with threats, expecting significant others to support and protect them instead (Mikulincer & Shaver, in press). Anxious individuals should show deficits in love, the positive emotion by definition associated with positive feelings toward attachment figures, but without a secure base or a sense of self-efficacy their joy, contentment, and pride might also be compromised.

Attachment-avoidant individuals tend to describe their intimate relationships as temporary and low in warmth (Hazan & Shaver, 1987), and tend to be extremely self-reliant, placing little value on close relationships with others (Mikulincer & Shaver, in press). This profile might facilitate joy, contentment, and pride to a greater degree than attachment anxiety, but at the expense of social bonding positive emotions such as love and compassion. Attachment style was not expected to predict variability in the epistemological emotions amusement and awe.

Methods

Sample

Participants were 108 undergraduates enrolled in a personality psychology course at a major, West-Coast university. Mean age was 21.7 years ($SD=4.7$), 70% of participants were female; 29% European-American, 44% Asian or Asian-American, 6% Latino/Latina, 5% African-American, and 16% of another ethnicity or declined to state their ethnicity. A subsample of 58 participants provided peer-ratings using the Big Five Inventory (see below). Mean age for these participants was 21.8 years ($SD=5.3$), 71% were female; 28% European-American, 47% Asian or Asian-American, 5% Latino/Latina, 2% African-American, and 18% of another ethnicity, or declined to state their ethnicity. Of the 58 peers who provided the peer ratings, 26 were spouses or romantic partners, 27 were friends, three were relatives, and two were roommates not also described as friends. On average, peer raters had known the targets for 3.6 years ($SD=4.1$).

Measures

Dispositional Positive Emotion Scales. The Dispositional Positive Emotion Scales (DPES) questionnaire is a 38-item, self-report instrument with seven 5- or 6-item scales: joy, contentment, pride, love, compassion, amusement, and awe. DPES items are presented by scale in Appendix A; a mixed-item format is used in the instrument. Participants report their level of agreement with each statement on a 7-point scale anchored at (1) "strongly disagree" and (7) "strongly agree." In this sample, Cronbach's alpha for each scale was: joy, 0.82; contentment, 0.92; pride, 0.80; love, 0.80; compassion, 0.80; amusement, 0.75; awe, 0.78. Correlations among the DPES scales generally suggest related but distinct constructs. In the present sample, DPES scale intercorrelations ranged from a low of 0.05 (compassion with amusement) to a high of 0.75 (joy with contentment), averaging 0.44. Only three correlations between scales were greater

than 0.70: that between joy and contentment ($r=0.75$, $p<0.001$); between joy and pride ($r=0.71$, $p<0.001$); and between contentment and pride ($r=0.72$, $p<0.001$).

The Big Five. The Big Five personality dimensions Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience were measured using two instruments, one for self-ratings and one for peer ratings. Items on both instruments are statements about the target individual; participants indicate their agreement with each using a 5-point scale anchored at (1) disagree strongly and (5) agree strongly. Self-report Big Five ratings were assessed using the NEO-PIR, a 240-item instrument (Costa, McCrae, & Dye, 1991). In this sample, Cronbach's alphas for self-ratings on the NEO-PIR were: Extraversion, 0.90; Agreeableness, 0.88; Conscientiousness, 0.93; Neuroticism, 0.93; Openness to Experience, 0.91. Peer ratings of the Big Five were assessed using the Big Five Inventory, or BFI, which contains 44 items (Benet-Martinez & John, 1998; John, Donahue, & Kentle, 1991). Cronbach's alphas for peer-ratings on the BFI were: Extraversion, 0.88; Agreeableness, 0.85; Conscientiousness, 0.84; Neuroticism, 0.85; Openness to Experience, 0.84.

Adult attachment style. Adult attachment style was measured using two instruments. The Experience in Close Relationships questionnaire (ECR) is a 36-item instrument with 18-item anxiety and avoidance scales (Brennan, Clark, & Shaver, 1998). Items are phrased as statements about the self in the context of romantic relationships in general; participants rate their agreement with each item on a scale from 1 to 7. In this sample, Cronbach's alpha for the anxiety scale was 0.90, and for the avoidance scale 0.94. In addition, participants completed the Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991), which consists of four paragraphs describing secure (low anxiety, low avoidance), dismissing (low anxiety, high avoidance), preoccupied (high anxiety, low avoidance), and fearful (high anxiety, high avoidance) attachment styles; participants rated how well each paragraph described them on a scale from 1 to 7.

Results

Dispositional Positive Emotions and the Big Five

Correlations between the DPES scales and Big Five scores on the NEO-PIR are presented in Table I. All DPES scales correlated significantly

Table I. DPES correlations with Big Five self-ratings on the NEO-PIR.

	Extraversion	Conscientiousness	Agreeableness	Openness to Experience	Neuroticism
Joy	0.66**	0.20*	0.03	0.28**	-0.32**
Contentment	0.48**	0.34**	0.07	0.08	-0.56**
Pride	0.58**	0.34**	-0.11	0.18	-0.44**
Love	0.59**	0.08	0.37**	0.28**	-0.27**
Compassion	0.33**	0.15	0.49**	0.40**	0.05
Amusement	0.26**	-0.12	-0.08	0.20*	-0.10
Awe	0.34**	0.07	-0.02	0.49**	-0.05
Mean	0.48	0.15	0.12	0.28	-0.25

* $p < 0.05$; ** $p < 0.01$.

Table II. Correlations of DPES scales with peer-ratings on the Big Five Inventory (BFI).

	Extraversion	Conscientiousness	Agreeableness	Openness to Experience	Neuroticism
Joy	0.25†	0.01	0.03	0.01	-0.12
Contentment	0.26*	0.23†	0.09	0.02	-0.25†
Pride	0.34**	0.04	0.02	0.02	-0.18
Love	0.14	0.17	0.38**	-0.05	-0.31*
Compassion	-0.15	-0.13	0.15	0.07	0.23†
Amusement	-0.03	-0.02	0.09	0.06	-0.16
Awe	0.14	-0.03	0.18	0.22†	0.04
Mean	0.14	0.04	0.14	0.05	-0.11

† $p < 0.10$; * $p < 0.05$; ** $p < 0.01$.

with Extraversion. Effect sizes varied considerably, however, with joy, contentment, pride, and love correlating between 0.48 and 0.66 with Extraversion, and compassion, amusement, and awe correlating between 0.26 and 0.34 with Extraversion. Only DPES scales measuring domain-relevant positive emotion dispositions correlated significantly with Conscientiousness and Agreeableness. Only the agency-focused emotions joy, contentment, and pride were significantly correlated with Conscientiousness, and only DPES love and compassion correlated significantly with Agreeableness. The DPES Awe scale was most strongly correlated with self-rated Openness to Experience, as hypothesized, and the amusement-openness correlation was also significant. In addition, the DPES joy, love, and compassion scales were significantly correlated with openness. Self-rated Neuroticism was only significantly predicted by DPES joy, contentment, pride, and love.

Though effect sizes were smaller, a similar pattern was observed in correlations between self-reported dispositional positive affect measured via the DPES and peer-rated Big Five personality, presented in Table II. Peer-rated Extraversion was significantly correlated with self-rated dispositional contentment and pride, and the correlation with DPES joy was marginally significant. Peer-rated Conscientiousness was associated with self-rated contentment at the marginal level of significance. Peer-rated Agreeableness was only significantly correlated with self-rated love, and peer-rated Openness to Experience was

marginally correlated with self-rated awe. Correlates of peer-rated Neuroticism differed somewhat from the pattern observed with self-ratings. Peer-rated Neuroticism was negatively associated with love and contentment, and positively associated with compassion.

Dispositional Positive Emotions and Attachment Style

Correlations between the DPES scales and ECR anxiety and avoidance scales, as well as DPES correlations with ratings of the four attachment paragraphs, are presented in Table III. ECR anxiety was negatively correlated with DPES joy, contentment, pride, and love, and ECR avoidance was only negatively correlated with DPES love and compassion. Ratings of the secure paragraph were positively and significantly correlated with DPES joy, contentment, pride, love, and compassion. Ratings of the dismissing paragraph were negatively associated with DPES love and compassion, but positively associated with DPES contentment, pride, and amusement. Ratings of the preoccupied paragraph were negatively associated with DPES joy, contentment, and pride. Finally, ratings of the preoccupied paragraph were not significantly associated with DPES love scores, but were negatively associated (at the marginal level of significance) with DPES Awe scores. Ratings of the fearful paragraph were

Table III. Correlations of DPES scales with adult attachment.

	ECR		Paragraphs			
	Anxiety	Avoidance	Secure	Dismissing	Preoccupied	Fearful
Joy	-0.23*	-0.13	0.28**	0.09	-0.26*	-0.19†
Contentment	-0.40**	-0.13	0.31**	0.20*	-0.33**	-0.26**
Pride	-0.37**	-0.06	0.27**	0.17†	-0.30**	-0.15
Love	-0.20**	-0.30**	0.48**	-0.17†	-0.08	-0.40**
Compassion	0.13	-0.24*	0.22*	-0.29**	0.16	-0.05
Amusement	-0.08	0.05	0.10	0.19†	-0.06	-0.03
Awe	-0.06	0.06	0.15	0.12	-0.17†	-0.06
Mean <i>r</i>	-0.18	-0.11	0.26	0.04	-0.15	-0.17

† $p < 0.10$; * $p < 0.05$; ** $p < 0.01$. All tests of significance are two-tailed.

negatively associated with DPES love, contentment, and pride.

Discussion

The present study explored correlations between dispositional experience of seven varieties of positive emotion and two core aspects of personality: the Big Five factors Extraversion, Agreeableness, Openness to Experience, Neuroticism, and Conscientiousness, and adult attachment style. Prior studies have consistently observed relationships among dispositional positive affect, each of the Big Five factors (particularly Extraversion), and secure attachment. The present results suggest that relationships between dispositional positive emotionality and these core personality variables are more complex and differentiated than suggested by previous research, although the association of positive emotionality with Extraversion was robust across the several varieties of dispositional positive emotion.

In our analyses, Extraversion was significantly associated with all of the positive emotion dispositions, at least using self-report measures of the Big Five. This finding is consistent with the notion of a common feature of Extraversion and positive emotionality, suggested by several researchers (e.g., Costa & McCrae, 1980; Gray, 1970; Hogan, 1983; Watson & Clark, 1997; Wiggins, 1979). Theorists have proposed that reward orientation or response to opportunities in the environment may be such a feature (e.g., Carver & White, 1994; Fredrickson, 1998; Watson & Clark, 1997). The proposal that reward orientation is at the core of positive emotion is consistent with several findings cited in the argument for the dimensional approach to emotion. Examples include the finding that happiness, amusement, and interest in response to film clips are all associated with a particular pattern of resting frontal lobe EEG asymmetry (Tomarken, Davidson, & Henriques, 1990; see also Sutton & Davidson, 1997 on the role of dispositional BAS

in this effect), and findings that dopaminergic “reward circuits” are activated by disparate positive stimuli, ranging from chocolate to eye contact with an attractive person to humor to classical music (Blood & Zatorre, 2001; Kampe, Frith, Dolan, & Frith, 2002; Mobbs, Grecius, Abdel-Azim, Menon, & Reiss, 2003; Small, Zatorre, Dagher, Evans, & Jones-Gotman, 2001).

The proposal that behavioral activation in the pursuit of reward is a core or common feature of the positive emotions also explains why some positive emotion dispositions were more strongly associated with Extraversion than others. Joy and pride are arguably the positive emotions most explicitly involving behavioral activation. Contentment suggests that the pursuit of rewards has been successful, and one function of love may be to provide a secure base for behavioral activation (Bowlby, 1979). The association of Extraversion with dispositional joy, pride, and contentment was sufficiently overt that correlations emerge in analyses using peer-rated Extraversion, as well as self-reports of this trait. Positive emotions for which concrete rewards are more distal, however, are more weakly associated with Extraversion (amusement, awe, and compassion).

Although reward orientation may be a common theme, the different positive emotion dispositions measured by the DPES appear to predict orientation toward different kinds of rewards in different life domains. There are many different kinds of reward in the environment, just as there are many different kinds of threat (Fredrickson, 1998). A functional response in the presence of chocolate differs, quite obviously, from the functional response to a newborn infant. Conscientiousness was only associated with positive emotion derived from agency in the environment. Agreeableness was only associated with positive emotion derived from intimate social bonds. Openness was most strongly associated with positive emotion experienced during complex gathering and manipulation of information, although it also strongly predicted compassion (suggesting that

Openness to Experience facilitates perception of others as valid claimants of one's caregiving), and significantly predicted joy and love. Specificity was observed in analyses with both self-report and peer-rating Big Five measures, suggesting that positive emotion specificity is important not only in predicting self-concept, but also in predicting behavior that is observed by others.

Correlations between DPES scales and adult attachment measures also showed theoretically meaningful differentiation. Attachment theory holds that the function of attachment is to provide a secure base for exploration and achievement, as well as facilitating proximity maintenance (Bowlby, 1979; Fraley & Shaver, 2000). Consistent with this theory, correlations between attachment security and DPES joy, contentment, pride, love, and compassion suggest that more secure individuals derive greater pleasure from agentic resource acquisition, as well as from intimate social bonds. As predicted, different forms of attachment insecurity were associated with different kinds of emotional benefits. Attachment anxiety or preoccupied attachment was associated with only moderate and inconsistent deficits in positive emotion as the recipient of caregiving, and was not associated with deficits in compassion. This suggests that anxious/preoccupied individuals are still "in the game" in terms of trying to derive positive emotion from intimate relationships. Their deficits in agentic, reward-focused positive emotions are more striking: without a true sense of security in intimate relationships, these individuals are less able to reap the rewards presented by the environment. In contrast, avoidant or dismissive individuals showed more desirable levels of contentment and pride, while showing deficits in love and compassion. These individuals may have succeeded in disengaging their ability to perform in the environment from needs for security in close relationships, but have less opportunity for the pleasure derived from such relationships.

In addition to improving our understanding of the role of positive emotion in personality, the data presented here speak to the ongoing conflict between dimensional and discrete emotion theoretical perspectives (e.g., Russell & Feldman-Barrett, 1999). Our findings provide support for both. Indeed, there is increasing recognition that human emotion may be arranged hierarchically, with broad categories of positive and negative affect each composed of related, but distinguishable, positive and negative emotions (e.g., Diener, Smith, & Fujita, 1995; Watson & Clark, 1992). Multitrait multi-method studies have supported the validity of this model for negative emotion (Watson & Clark, 1992), but the validity of the model for positive emotion has not been addressed with the same thoroughness.

This may be, in part, due to uncertainty about which positive emotion constructs might be expected to differentiate. The results presented here are consistent with a hierarchical model, and also provide evidence that certain positive emotion constructs can be meaningfully differentiated, at least in their relationships to other personality variables. Future research on other emotion response components, such as facial expressions of emotion, central and autonomic nervous system activation, cognition, and functional behavior will contribute further to this inquiry.

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References

- Adler, M. G., & Fagley, N. S. (2005). Appreciation: Individual differences in finding value and meaning as a unique predictor of subjective well-being. *Journal of Personality, 73*, 79–114.
- Ainsworth, M. D. S. (1982). Attachment: Retrospect and prospect. In C. M. Parkes & J. Stevenson-Hinde (Eds.), *The Place of Attachment in Human Behavior* (pp. 3–30). New York: Basic Books.
- Bachorowski, J. A., & Braaten, E. B. (1994). Emotional intensity: Measurement and theoretical implications. *Personality and Individual Differences, 17*, 191–199.
- Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology, 61*, 226–244.
- Benet-Martinez, V., & John, O. P. (1998). Los Cinco Grandes across cultures and ethnic groups: Multitrait, multimethod analyses of the Big Five in English and Spanish. *Journal of Personality and Social Psychology, 75*, 729–750.
- Berenbaum, H. (2002). Varieties of joy-related pleasurable activities and feelings. *Cognition and Emotion, 16*, 473–494.
- Blood, A. J., & Zatorre, R. J. (2001). Intensely pleasurable responses to music correlate with activity in brain regions implicated in reward and emotion. *Proceedings of the National Academy of Sciences, 98*, 11818–11823.
- Bowlby, J. (1979). *The making and breaking of affectional bonds*. London: Tavistock.
- Brennan, K. A., Clark, C. L., & Shaver, P. R. (1998). Self-report measurement of adult attachment: An integrative overview. In J. A. Simpson & W. S. Rholes (Eds.), *Attachment Theory and Close Relationships* (pp. 46–76). New York: Guilford.
- Carver, C. S., & White, T. L. (1994). Behavioral inhibition, behavioral activation, and affective responses to impending reward and punishment: The BIS/BAS scales. *Journal of Personality and Social Psychology, 67*, 319–333.
- Cashdan, E. (1998). Smiles, speech, and body posture: How women and men display sociometric status and power. *Journal of Nonverbal Behavior, 22*, 209–228.

- Costa, P. T., & McCrae, R. R. (1980). Influence of extraversion and neuroticism on subjective well-being: Happy and unhappy people. *Journal of Personality and Social Psychology*, *38*, 668–678.
- Costa, P. T., McCrae, R. R., & Dye, D. A. (1991). Facet scales for agreeableness and conscientiousness: A revision of the NEO personality inventory. *Personality and Individual Differences*, *12*, 887–898.
- Davidson, R. J. (1993). The neuropsychology of emotion and affective style. In M. Lewis & J. M. Haviland (Eds.), *Handbook of Emotions*, 2nd (pp. 143–154). New York: Guilford.
- Depue, R. A., & Iacono, W. G. (1989). Neurobehavioral aspects of affective disorders. In M. R. Rosenzweig & L. W. Porter (Eds.), *Annual Review of Psychology*, *40* (pp. 457–492). Palo Alto, CA: Annual Reviews Inc.
- Diener, E., Smith, H., & Fujita, F. (1995). The personality structure of affect. *Journal of Personality and Social Psychology*, *69*, 130–141.
- Doi, T. (1973). *The anatomy of dependence*. Tokyo: Kodansha International.
- Eisenberg, N., Fabes, R. A., Miller, P. A., Fultz, J., Shell, R., Mathy, R. M., & Reno, R. R. (1989). Relation of sympathy and distress to prosocial behavior: A multi-method study. *Journal of Personality and Social Psychology*, *57*, 55–66.
- Ekman, P. (1994). All emotions are basic. In P. Ekman & R. J. Davidson (Eds.), *The Nature of Emotion: Fundamental Questions* (pp. 15–19). New York: Oxford University Press.
- Ekman, P., & Davidson, R. J. (1994). *The nature of emotion: Fundamental questions*. New York: Oxford University Press.
- Ekman, P., Friesen, W. V., O'Sullivan, M., Chan, A., Diacyanni-Tarlatzis, I., Heider, K., et al. (1987). Universals and cultural differences in the judgments of facial expressions of emotion. *Journal of Personality and Social Psychology*, *53*, 712–717.
- Estrada, P. (1995). Adolescents' self-reports of prosocial responses to friends and acquaintances: The role of sympathy-related cognitive, affective, and motivational processes. *Journal of Research on Adolescence*, *5*, 173–200.
- Feeney, B. C., & Kirkpatrick, L. A. (1996). The effects of adult attachment and presence of romantic partners on physiological responses to stress. *Journal of Personality and Social Psychology*, *70*, 255–270.
- Fehr, B., & Russell, J. A. (1984). Concept of emotion viewed from a prototype perspective. *Journal of Experimental Psychology: General*, *113*, 464–486.
- Fraley, R. C., & Shaver, P. R. (2000). Adult romantic attachment: Theoretical developments, emerging controversies, and unanswered questions. *Review of General Psychology*, *4*, 132–154.
- Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology*, *2*, 300–319.
- Gilbert, P. (2001). Evolution and social anxiety: The role of attraction, social competition, and social hierarchies. *Psychiatric Clinics of North America*, *24*, 723–751.
- Gray, J. A. (1970). The psychophysiological basis of introversion-extraversion. *Behavioural Research Therapy*, *8*, 249–266.
- Griffin, D. W., & Bartholomew, K. (1994). Models of the self and other: Fundamental dimensions underlying measurement of adult attachment. *Journal of Personality and Social Psychology*, *67*, 430–445.
- Gross, J. J., Sutton, S. K., & Ketelaar, T. (1998). Relations between affect and personality: Support for the affect-level and affective-reactivity views. *Personality and Social Psychology Bulletin*, *24*, 279.
- Haidt, J. (2003). Elevation and the positive psychology of morality. In C. L. M. Keyes & J. Haidt (Eds.), *Flourishing: Positive psychology and the life well-lived* (pp. 275–289). Washington, DC: APA.
- Hankin, B. L., Kassel, J. D., & Abela, J. R. (2005). Adult attachment dimensions and specificity of emotional distress symptoms: Prospective investigations of cognitive risk and interpersonal stress generation as mediating mechanisms. *Personality and Social Psychology Bulletin*, *31*, 136–151.
- Hazan, C., & Shaver, P. R. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology*, *52*, 511–524.
- Hildebrandt, K. A., & Fitzgerald, H. E. (1983). The infant's physical attractiveness: Its effect on bonding and attachment. *Infant Mental Health Journal*, *4*, 3–12.
- Hogan, R. T. (1983). A socioanalytic theory of personality. In M. Page (Ed.), *1982 Nebraska Symposium on Motivation* (pp. 55–89). Lincoln: University of Nebraska Press.
- Hrdy, S. B. (1999). *Mother Nature: Maternal instincts and how they shape the human species*. New York: Ballantine.
- Isaacowitz, D. M. (2005). Correlates of well-being in adulthood and old age: A tale of two optimisms. *Journal of Research in Personality*, *39*, 224–244.
- Isen, A. M., Daubman, K. A., & Nowicki. (1987). Positive affect facilitates creative problem solving. *Journal of Personality and Social Psychology*, *57*, 1122–1131.
- Isen, A. M., Niedenthal, P. M., & Cantor, N. (1992). An influence of positive affect on social categorization. *Motivation and Emotion*, *16*, 65–78.
- John, O. P. (1990). The “big five” factor taxonomy: Dimensions of personality in the natural language and in questionnaires. In L. A. Pervin (Ed.), *Handbook of personality: Theory and research* (pp. 66–100). New York: Guilford.
- John, O. P., Donahue, E. M., & Kentle (1991). *The “Big Five” inventory: Versions 4a and 5*. Berkeley, CA: Institute for Personality and Social Research.
- Kampe, K. K., Frith, C. D., Dolan, R. J., & Frith, U. (2002). Reward value of attractiveness and gaze. *Nature*, *413*(6856), 589.
- Keltner, D., & Haidt, J. (2003). Approaching awe, a moral, spiritual, and aesthetic emotion. *Cognition and Emotion*, *17*, 297–314.
- Kobak, R., Cole, H., Ferenz-Gillies, R., Fleming, W., & Gamble, W. (1993). Attachment and emotion regulation during mother-teen problem solving: A control theory analysis. *Child Development*, *64*, 231–245.
- Kobak, R. R., Sudler, N., & Gamble, W. (1991). Attachment and depressive symptoms during adolescence: A developmental pathways analysis. *Development and Psychopathology*, *3*, 461–474.
- Larsen, R. J., & Ketelaar, T. (1989). Extraversion, neuroticism, and susceptibility to positive and negative mood induction procedures. *Personality and Individual Differences*, *10*, 1221–1228.
- Latta, R. L. (1999). *The basic humor process: A cognitive-shift theory and the case against incongruity*. New York: Mouton de Gruyter.
- Lazarus, R. S. (1991). Goal congruent (positive), & problematic emotions. In R. S. Lazarus (Ed.), *Emotion and adaptation*. New York: Oxford University Press.
- Levenson, R. W., Ekman, P., Heider, K., & Friesen, W. V. (1992). Emotion and autonomic nervous system activity in the Minangkabau of West Sumatra. *Journal of Personality and Social Psychology*, *62*, 972–988.
- MacLeod, A. K., & Conway, C. (2005). Well-being and the anticipation of future positive experiences: The role of income, social networks, and planning ability. *Cognition and Emotion*, *19*, 357–373.
- Magai, C., Distel, N., & Liker, R. (1995). Emotion socialization, attachment, and patterns of adult emotional traits. *Cognition and Emotion*, *9*, 461–481.

- McCrae, R. R., & Costa Jr, P. T. (1991). Adding liebe und arbeit: The full Five-factor model and well-being. *Personality and Social Psychology Bulletin*, 17, 227–232.
- McCrae, R. R., & John, O. P. (1992). An introduction to the five-factor model of personality. *Journal of Personality*, 60, 175–216.
- McCullough, M. C., Kilpatrick, S. D., Emmons, R. A., & Larson, D. B. (2001). Is gratitude a moral affect?. *Psychological Bulletin*, 127, 249–266.
- Meyer, G. J., & Shack, J. R. (1989). The structural convergence of mood and personality: Evidence for old and new “directions”. *Journal of Personality and Social Psychology*, 57, 691–706.
- Mikulincer, M., Birnbaum, G., Woddis, D., & Nachmias, O. (2000). Stress and accessibility of proximity-related thoughts: Exploring the normative and intraindividual components of attachment theory. *Journal of Personality and Social Psychology*, 78, 509–523.
- Mikulincer, M., Gillath, D., Halery, V., Avihov, N., Avidan, S., & Eshkoli, N. (2001). Attachment theory and reactions to others’ needs: Evidence that activation of the sense of attachment security promotes empathic responses. *Journal of Personality and Social Psychology*, 81(6), 1205–1224.
- Mobbs, D., Grecius, M. D., Abdel-Azim, E., Menon, V., & Reiss, A. L. (2003). Humor modulates the mesolimbic reward centers. *Neuron*, 40, 1041–1048.
- Panksepp, J. (1998). *Affective neuroscience: The foundations of human and animal emotions*. New York: Oxford University Press.
- Pervin, L. A. (1993). Affect and personality. In M. Lewis & J. M. Haviland (Eds.), *Handbook of Emotions* (pp. 301–312). New York: Guilford.
- Roberts, J. E., Gotlib, I. H., & Kassel, J. D. (1996). Adult attachment security and symptoms of depression: The mediating roles of dysfunctional attitudes and low self-esteem. *Journal of Personality and Social Psychology*, 70, 310–320.
- Rosenstein, D. S., & Horowitz, H. A. (1996). Adolescent attachment and psychopathology. *Journal of Consulting and Clinical Psychology*, 64, 244–253.
- Russell, J. A., & Feldman-Barrett, L. (1999). Core affect, prototypical emotional episodes, and other things called emotion: Dissecting the elephant. *Journal of Personality and Social Psychology*, 76, 805–819.
- Scherer, K. (1997). The role of culture in emotion-antecedent appraisal. *Journal of Personality and Social Psychology*, 73, 902–922.
- Seidner, L. B., Stipek, D. J., & Feshbach, N. D. (1988). A developmental analysis of elementary school-aged children’s concepts of pride and embarrassment. *Child Development*, 59, 367–377.
- Shaver, P. R., & Mikulincer, M. (2005). Attachment theory and research. Resurrection of the psychodynamic approach to personality. *Journal of Research in Personality*, 39(1), 22–45.
- Shaver, P. R., Morgan, H. J., & Wu, S. (1996). Is love a “basic” emotion? *Personal Relationships*, 3, 81–96.
- Shiota, M. N., & Keltner, D. (2006). *The positive emotions: A taxonomy*. Unpublished manuscript.
- Shiota, M. N., Campos, B., Keltner, D., & Hertensetein, M. (2004). Positive emotion and the regulation of interpersonal relationships. In P. Philippot & R. S. Feldman (Eds.), *The regulation of emotion*. Mahwah, NJ: Lawrence Erlbaum.
- Simpson, J. A. (1990). Influence of attachment styles on romantic relationships. *Journal of Personality and Social Psychology*, 59, 971–980.
- Small, D. M., Zatorre, R. J., Dagher, A., Evans, A. C., & Jones-Gotman, M. (2001). Changes in brain activity related to eating chocolate: From pleasure to aversion. *Brain*, 124, 1720–1733.
- Smith, C. A., & Ellsworth, P. C. (1985). Patterns of cognitive appraisal in emotion. *Journal of Personality and Social Psychology*, 48, 813–838.
- Snyder, C. R., Sympson, S. C., Ybasco, F. C., Borders, T. F., Babyak, M. A., & Higgins, R. L. (1996). Development and validation of the State Hope Scale. *Journal of Personality and Social Psychology*, 70, 321–335.
- Sroufe, L. A. (1996). *Emotional development: The organization of emotional life in the early years*. New York: Cambridge University Press.
- Stipek, D. (1998). Differences between Americans and Chinese in the circumstances evoking pride, shame, and guilt. *Journal of Cross-Cultural Psychology*, 29, 616–629.
- Sutton, S. K., & Davidson, R. J. (1997). Prefrontal brain asymmetry: A biological substrate of the behavioral approach and inhibition systems. *Psychological Science*, 8, 204–210.
- Tiedens, L. Z., Ellsworth, P. C., & Mesquita, B. (2000). Stereotypes about sentiments and status: Emotional expectations for high- and low-status group members. *Personality and Social Psychology Bulletin*, 26, 560–574.
- Tomarken, A. J., Davidson, R. J., & Henriques, J. B. (1990). Resting frontal brain asymmetry predicts affective responses to films. *Journal of Personality and Social Psychology*, 59, 791–801.
- Torquati, J. C., & Raffaelli, M. (2004). Daily experiences of emotions and social contexts of securely and insecurely attached adults. *Journal of Adolescent Research*, 19, 740–758.
- Tracy, J. L., & Robins, R. W. (2004). Show your pride: Evidence for a discrete emotion expression. *Psychological Science*, 15, 194–197.
- Watson, D., & Clark, L. A. (1992). Affects separable and inseparable: On the hierarchical arrangement of the negative affects. *Journal of Personality and Social Psychology*, 62, 489–505.
- Watson, D., & Clark, L. A. (1997). Extraversion and its positive emotional core. In L. A. Pervin & O. P. John (Eds.), *Handbook of Personality Psychology* (pp. 767–793). New York: Guilford.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063–1070.
- Watson, D., Wiese, D., Vaidya, J., & Tellegen, A. (1999). The two general activation systems of affect: Structure findings, evolutionary considerations and psychobiological evidence. *Journal of Personality and Social Psychology*, 76(5), 820–838.
- Wiggins, J. S. (1979). A psychological taxonomy of trait-descriptive terms: The interpersonal domain. *Journal of Personality and Social Psychology*, 37, 395–412.
- Wilson, K., & Gullone, E. (1999). The relationship between personality and affect over the lifespan. *Personality and Individual Differences*, 27, 1141–1156.

Appendix A: The dispositional positive emotion scales

Joy

- I often feel bursts of joy.
 I am an intensely cheerful person.
 I am often completely overjoyed when something good happens.
 On a typical day, many events make me happy.
 Good things happen to me all the time.
 My life is always improving.

Contentment

I am generally a contented person.
I am at peace with my life.
When I think about my life I experience a deep
feeling of contentment.
I feel satisfied more often than most people.
My life is very fulfilling.

Pride

I feel good about myself.
I am proud of myself and my accomplishments.
Many people respect me.
I always stand up for what I believe.
People usually recognize my authority.

Love

Other people are generally trustworthy.
I develop strong feelings of closeness to people
easily.
I find it easy to trust others.
I can depend on people when I need help.
People are usually considerate of my needs and
feelings.
I love many people.

Compassion

It's important to take care of people who are
vulnerable.
When I see someone hurt or in need, I feel a
powerful urge to take care of them.
Taking care of others gives me a warm feeling inside.
I often notice people who need help.
I am a very compassionate person.

Amusement

I find humor in almost everything.
I really enjoy teasing people I care about.
I am very easily amused.
The people around me make a lot of jokes.
I make jokes about everything.

Awe

I often feel awe.
I see beauty all around me.
I feel wonder almost every day.
I often look for patterns in the objects around me.
I have many opportunities to see the beauty of nature.
I seek out experiences that challenge my under-
standing of the world.