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Feeling safe and content: A specific affect regulation system? Relationship to depression, anxiety, stress, and self-criticism

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Feeling safe and content: A specific affect regulation system? Relationship to depression, anxiety, stress, and self-criticism

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Recent work in the neuroscience of positive affect has suggested that there may be two different types of positive affect. One is linked to a drive/seeking system (and may be dopaminergic mediated) and the other is a soothing-contentment system (and may be opiate/oxytocin mediated). This study sought to develop a self-report scale that could tap these positive affects in regard to characteristic feelings individuals may have. Results from 203 students suggested three (rather than two) underlying factors: activated positive affect, relaxed positive affect, and safe/content positive affect. It was the safe/content positive affect that had the highest negative correlations with depression, anxiety and stress, self-criticism, and insecure attachment. Hence, greater clarity on the different types and functions of positive affect may demystify the relationship between positive emotions and well-being.

Keywords: attachment; depression; positive affect; self-criticism

Introduction

There is a long history to viewing positive and negative affects as two distinct dimensions (Watson et al., 1995a, b). Negative affects include anxiety, anger, and disgust, while positive affects include joy, happiness, and excitement. These affect dimensions have been measured using self-report scales such as the Positive And Negative Affects Scale (PANAS; Watson et al., 1995a, b) and the Comprehensive Personality and Affect Scales (COPAS; Lubin & Whitlock, 2000). The COPAS has five sub-factors for positive affect, namely: contentment, joy, love, vitality, and excitement (Lubin & Whitlock, 2000). In regard to positive affects, Fredrickson and colleagues (Fredrickson, 1998, 2001; Fredrickson & Losada, 2005; Fredrickson, Tugade, Waugh, & Larkin, 2003) note that there is no agreed classification of positive emotions, although emotions such as joy, contentment, pride, love, interest, and sexual desire are examples. Ekman (1992) distinguished between the positive affects of happiness and surprise. Happiness can be further distinguished as amusement, pride in achievement, satisfaction, relief, and contentment.

In addition to psychometric studies of positive emotions, studies have focused on the evolved function and neurological mechanisms of emotions (Fredrickson, 1998; Panksepp, 1998, 2007). From this perspective, negative emotions are believed to have evolved to enable organisms to deal with obstacles to goals and various forms of threat, and are sometimes referred to as threat-focussed or defensive emotions (Buck, 1988; Gilbert, 1989; Panksepp, 1998). In regard to the functions of positive affect, Fredrickson's (1998, 2001) social-evolutionary model suggests that positive emotions help people broaden their perspectives, build their resources, and cope with adversities. Indeed, there is now evidence that positive emotions have numerous impacts on cognitive and social processes (Ashby, Isen, & Turken, 1999; Fredrickson et al., 2003).

However, different emotions have different elicitors and functions. For example, Gray's (1987) neurophysiological model distinguished a behavioural inhibition system (BIS; triggered by cues of novelty, punishment, and absence of expected reward) from a behavioural activation system (BAS; triggered by rewards and the anticipation of rewards). In general, the BIS functions to deal with threats, whereas the BAS enables approach to rewards and incentives. Self-report scales have suggested a single factor for the BIS but three factors (of reward responsiveness, drive, and fun seeking) for the BAS (Cambell-Sills, Liverant, & Brown, 2004; Carver & White, 1994). However, these approaches to positive affect do not focus on the positive affects associated with contentment, a sense of peaceful well-being, safeness, and affection. Indeed the BAS (as the term implies) is focused on activation. In contrast, Bowlby (1969, 1973), Panksepp (1998),

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and Gilbert (1989, 1993) suggest that positive emotions (like negative emotions) can also be elicited and regulated in social and non-social contexts. As an example, only animals with an attachment system can be calmed and soothed in social contexts. Nesse (1998) suggested that positive *social* emotions are related to signals of social success (such as being accepted, valued, desired, and loved).

Recent research on the neurophysiology of positive affects suggests there are two different but interactive positive affect regulation systems (Depue & Morrone-Strupinsky, 2005). One positive affect regulation system is linked to doing/achieving and anticipating rewards/successes (related to Gray's, 1987, BAS). This system may be dopaminergic, and is arousing and activated with the function of 'driving' behaviour to seek and obtain rewards (Panksepp, 1998). Once a goal has been obtained, however (e.g., food has been acquired, and the animal is not under threat), drive systems need to be 'turned off' to produce contentment or quiescence and balance energy expenditure. Depue and Morrone-Strupinsky (2005) suggest that the system responsible for such contentment can be regarded as a *specialized affect regulation system*. This second positive affect system is behaviourally de-activating (but is accompanied by positive affect), following the consummation of rewards and evolved as a system to turn off 'seeking.' It involves neurohormones such as the opiate system (Carter, 1998; Depue & Morrone-Strupinsky, 2005; Panksepp, 1998; Uväns-Morberg, 1998). Fredrickson (2001) also found evidence that there may be two types of positive affect regulation system but her distinction was less focused on 'function' and more on variations in activation/arousal (e.g., the state of joy represents high arousal and contentment represents low arousal).

Depue and Morrone-Strupinsky (2005) further suggest that this 'contentment system' became utilized as a key affect regulation system with the evolution of care providing and attachment. Indeed, one of the functions of mammalian caring is 'soothing the infant,' and producing states of calmness and contentment. Thus, Depue and Morrone-Strupinsky (2005) suggest that with the evolution of attachment and social affiliation, social signals of affiliation and care also came to regulate the contentment and safeness positive affect system, with the neurohormone oxytocin and the opiates playing key roles. Signals and stimuli such as stroking, holding, voice tone, facial expressions, and social support evolved as natural stimuli that activate this system, and have the effect of calming and soothing recipients (Uväns-Morberg, 1998; Wang, 2005). The oxytocin/opiate system can be regarded as an affect regulation system, in the sense that there is a co-assembly of different affects such as contentment, feelings of safeness and well-being, as well as various physiological effects on pain thresholds and the immune system that are part-regulated by these neurohormones (Depue & Morrone-Strupinsky, 2005).

There is increasing evidence that oxytocin is linked to social support and buffers stress; those with lower oxytocin having higher stress responsiveness (Heinrichs, Baumgartner, Kirschbaum, & Ehlert, 2003). Evidence points to the possibility that an oxytocin-opiate system is particularly linked to soothing, calming, and feelings of social connectedness and safeness (Carter, 1998; Depue & Morrone-Strupinsky, 2005; Field, 2000; Gilbert, 1989, 1993; Wang, 2005). The regulation of positive affect by *social* relationships has received interest from a number of different sources. First are the findings that, from birth, the brain has specialized systems that are attentive and highly responsive to social stimuli and cues in the form of voice tones, facial expressions, touching, and holding (Schore, 1994; Trevarthen & Aitken, 2001). Second, there is good evidence that these social signals are major regulators of arousal and emotions, physiological processes, such as stress hormones and immune functioning, and brain maturation (Cacioppo, Berston, Sheridan, & McClintock, 2000; Schore, 1994). So the nature and function of positive affects in social relationships, operating through the 'contentment/soothing system,' are partly to help people feel safe, turn off threat, and enable social exploration, sharing, and caring (Depue & Morrone-Strupinsky, 2005; Gilbert, 1989; Porges, 2003, 2007).

These findings suggest value in trying to focus psychological measures on these different types of positive affect regulation systems because they have different functions and different neurophysiological mediators. In addition, it is of interest to explore how different types of positive affect might relate to people's social experiences and their self-evaluations. Thus, this study aimed to develop a self-report measure that might begin the process of distinguishing positive affects linked to activated emotions in contrast to those of feeling safe and contented.

Aims

This study has five aims. First, we wanted to develop a scale that was specifically focused on the two types of positive affect regulation system indicated by neuroscience (Depue & Morrone-Strupinsky, 2005). The items for this scale were specifically selected to capture the essence of the two positive affect regulation systems (activation and contentment). Thus, it differs from other positive affect measures which are more general and inclusive, as they try to capture all types of positive affect.

Second, we sought to validate our new scale against other self-report scales that have been

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empirically rather than theoretically derived. We therefore focused on the COPAS (Lubin & Whitlock, 2000) because this has five positive affects that appear to overlap the affect regulating systems suggested by Depue and Morrone-Strupinsky (2005). However, we note that the COPAS contains items in the subscales that are not specifically linked to the constructs we are interested in. For example, the construct of contentment has items such as feeling 'sound,' 'steady,' 'sturdy,' and 'pleased.' The factor of excitement also contains items such as, 'aggressive,' 'daring,' and 'wild.'

The third aim was to explore how different types of positive affect regulation system relate to dimensions of attachment (as measured by the Adult Attachment Scale; Collins & Read, 1990). It is known that these relational experiences impact powerfully on people's mental health and well-being (Cacioppo et al., 2000). It is also suggested that secure relationships should be associated with more soothing/contentment affects (because attachments utilize this system), but not necessarily activation affects.

It is known that people who have a negative relationship with themselves, by being critical rather than being reassuring, are more vulnerable to psychopathology (Gilbert & Irons, 2005). Hence, a fourth aim was to explore positive affects in regard to people's relationship with themselves. We hypothesized that self-criticism would be linked to lower levels of feeling safe and content. The way people criticize or reassure themselves is measured by the Forms of Self-Criticism and Self-Reassurance Scale (Gilbert, Clarke, Hemple, Miles, & Irons, 2004). The final aim was to explore positive affects in relation to the psychopathology variables of depression, anxiety, and stress, as measured with the Depression, Anxiety, and Stress Scale (DASS; Lovibond & Lovibond, 1995). Taken together, this study will try to develop a self-report scale that maps onto two types of positive affect and, if successful, indicate how different types of positive affect are associated with attachment dispositions, self-evaluation and depression, anxiety, and stress.

Method

Participants

Two hundred and three undergraduate students (38 males and 165 females) from the University of Derby participated in the study. They ranged in age from 18–56 years with a mean age of 23.31 years ($SD = 7.45$). A set of six self-report measures were handed out at the end of lectures and informed consent was obtained from all participants. They were awarded two 'participation points' each as part of their undergraduate course requirements. We also used a second group of 180 students (31 males and 149 females) from another study (Richter, Gilbert, & McEwan, submitted) and explored factor structure replication for the new scale.

Measures

Activation and Safe/Content Affect Scale

The scale was developed to specifically focus on the two types of positive affect as illuminated through neuroscience research (Depue & Morrone-Strupinsky, 2005). In other words, we are trying to capture more of an affect regulating system as opposed to specific affects; namely activation and excitement, and safe, relaxed, and content. Thus, we have not sought to generate a generic positive affect scale. Five researchers working at the Mental Health Research Unit were asked to generate 'affect words' they thought captured dimensions of activation and excitement, and dimensions of feeling safe and content. Forty items were then listed and researchers scored each item (0–10) on how good an example of each affect class the item was. We then discussed each item and generated a second list of 24 items, 12 reflecting the emotions of activation such as, 'adventurous,' 'enthusiastic,' 'excited,' and 12 reflecting emotions of feeling 'calm,' 'peaceful,' and 'safe.' However, one of the activation words was 'assertive' and, on further discussion, it was felt that this was more of a social behaviour than an affect and therefore it was removed from the final scale. Thus, the finished scale had 23 items. Respondents are asked to rate each word on a five-point scale to indicate how characteristic each emotion is for them (0 = 'not characteristic of me'; 4 = 'very characteristic of me').

The Comprehensive Affect and Personality Scale (COPAS)

The COPAS was developed by Lubin and Whitlock (2000) to measure different dimensions of affect and personality by means of 15 subscales. Unlike the Activation and Safe/Content Affect Scale, the COPAS is a wide ranging and general scale that aims to capture all major positive affects. Affect is assessed by 10 dimensional scales: five negative (Depression, Hostility, Agitation, Anxiety, and Social Anxiety) and five positive scales (Contentment, Joy, Love, Vitality, and Excitement). Here we were only interested in the five subscales that focused on positive affect. Participants rated each adjective on a 5-point rating scale according to what extent the words describe feelings that the participants have. Lubin and Whitlock (2000) reported acceptable reliabilities (Cronbach's alpha ≥ 0.70).

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Adult Attachment Scale

The Adult Attachment Scale was developed by Collins and Read (1990). The 18-item scale originally was based on Hazan and Shaver's (1987) adult attachment descriptions. The scale measures three attachment dimensions. The first subscale is called 'Depend' and measures the degree to which people feel they are able to depend on others (e.g., 'I find it difficult to allow myself to depend on others'). The second subscale is called 'Anxiety' and this measures the degree to which people are worried about abandonment and want to merge with others (e.g., 'I often worry that my partner does not really love me'). The third subscale is 'Close' and measures the ease of getting close to others (e.g., 'I am somewhat uncomfortable being close to others'). Respondents are asked to rate the extent to which each statement best describes their feelings, from 'not at all characteristic of me' (1) to 'very characteristic of me' (5). The Cronbach's alphas for this scale were 0.75 for depend, 0.72 for anxiety, and 0.69 for close (Collins & Read, 1990).

Forms of Self-Criticism and Self-Reassuring Scale

This 22-item scale was developed by Gilbert et al. (2004) to measure people's critical and self-reassuring self-evaluative responses to setbacks or disappointments. Participants are asked to rate on a five-point scale (ranging from 0 = 'not at all like me' to 4 = 'extremely like me') how they might typically think and react when things go wrong for them. The scale measures two kinds of self-criticism: *inadequate self*, which focuses on a sense of personal inadequacy (e.g., 'I am easily disappointed with myself') and *hated self*, which measures the desire to hurt or persecute the self (e.g., 'I have become so angry with myself that I want to hurt or injure myself'). However, people can be self-reassuring and supportive when things go wrong for them and thus a third factor on this scale (called *reassured self*) measures abilities to be self-reassuring in the face of setbacks (e.g., 'I am able to care and look after myself'). The scale had Cronbach's alphas of 0.90 for inadequate self, 0.86 for hated self, and 0.86 for reassured self (Gilbert et al., 2004).

Depression, Anxiety and Stress Scale

This is a shortened version of the DASS 42 (Lovibond & Lovibond, 1995). It consists of 21 items; there are three subscales designed to measure levels of *depression* (e.g., 'I couldn't seem to experience any positive feelings at all'), *anxiety* (e.g., 'I was aware of dryness of my mouth'), and *stress* (e.g., 'I found it hard to wind down'). Respondents rate how much each statement applied to them over the past week, on a five-point scale (0 = 'Did not apply to me at all'; 4 = 'Applied to me very much, or most of the time'). The Depression Anxiety and Stress Scale subscales have satisfactory internal validity, with Cronbach's alphas of 0.94 for depression, 0.87 for anxiety, and 0.91 for stress (Antony, Bieling, Cox, Enns, & Swinson, 1998).

Results

All analyses were carried out using SPSS version 14 for PCs. The data was screened to check for normality of the distribution and outliers. Skewness values ranged from 0.00–1.20 and kurtosis from −0.01–1.20.

Factor analysis

The Activation and Safe/Content Affect Scale was designed to focus on two types of positive emotion as derived from neurophysiological research and evolutionary theory. We explored the 23 items of this scale using exploratory factor analysis (Maximum Likelihood extraction) with Promax (oblique) rotation. This was used in order to allow the factors to correlate with one another, and delineate a clear factor structure (Norman & Streiner, 2000).

The analysis revealed two factors with eigenvalues greater than one. However, there was a third factor with an eigenvalue of 0.92 which has been maintained in the final factor solution as there were high factor loadings on this factor and this solution was the most theoretically informative. Table 1a gives the items and factor loadings from the structure matrix.

Table 1a. Exploratory factor analysis for the Activation and Safe/Content Affect Scale.

	Factor		
	1	2	3
Energetic	**0.802**	0.217	0.225
Lively	**0.782**	0.117	0.351
Adventurous	**0.642**	0.265	0.148
Active	**0.608**	0.274	0.192
Enthusiastic	**0.600**	0.159	0.392
Dynamic	**0.584**	0.282	0.267
Excited	**0.552**	0.214	0.289
Eager	**0.401**	0.032	0.244
Relaxed	0.262	**0.794**	0.258
Peaceful	0.222	**0.747**	0.424
Calm	0.191	**0.675**	0.445
Tranquil	0.186	**0.664**	0.395
Laid back	0.169	**0.601**	0.241
Serene	0.221	**0.548**	0.339
Safe	0.214	0.426	**0.740**
Content	0.310	0.494	**0.702**
Secure	0.362	0.422	**0.606**
Warm	0.231	0.166	**0.503**

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The first factor consisted of 11 items. This factor captures feeling *activated* with the highest loading item being, 'energetic' and is labelled 'Activated Positive Affect.' However, three items, 'elated,' 'high spirited,' and 'motivated,' had high cross loadings. We dropped these items from this factor on both theoretical grounds and in order to try to generate a more 'pure' factor. We found that the item 'elated' loaded on two factors and made the structure complex. It is possible that 'elated' is linked to having achieved and being pleased with success. It is also a word that is probably less common in peoples' emotional vocabulary and may not fit with being an ordinary everyday potential emotion. Motivated was also removed because, on reflection, the characteristic of feeling motivated could have different meanings for people. For example, one can be motivated in a 'quiet and committed way' without necessarily feeling activated. 'High-spirited' was dropped because of its cross factor loading and also this may have been a confusing item for some people. Removal of this item certainly simplified the factor structure. Clearly, positive affect systems are highly interactive (Depue & Morrone-Strupinsky, 2005), hence trying to find self-report items in this early stage of research may be a bit haphazard. However, the eight items reported here seem a reasonable reflection of the kind of affect qualities we were seeking to explore. Table 1a gives the eight items of this factor included in the data analysis, with adjustment for item numbering.

The second factor consisted of seven items, the highest loading item was 'relaxed.' Thus, this factor captures positive affect in the absence of activity and was labelled 'Relaxed Positive Affect.' One item 'reflective' was excluded from further analysis as it had a low factor loading of 0.23. Table 1a gives the six items of this factor included in the data analysis, with adjustment for item numbering.

Although the third factor just missed having an eigenvalue of 1.00 (eigenvalue = 0.92), it was still maintained as a third factor in the final factor solution. This decision was based mainly on theoretical grounds, as this third factor seems to tap positive affect in the presence of safeness as conferred by self or others. The items in this factor had high factor loadings (0.49–0.76) and contributed at 5.11% to the variance. In addition, the Scree plot indicated the presence of three factors, thus supporting the three-factor solution. The item 'soothed' was excluded from further analysis as it had high cross loadings and, as noted above, we were trying to get as pure affect forms as we could. Thus the third factor consisted of four items, the highest loading item being 'safe,' and was labelled 'safe/content positive affect.'

A replication of the factor structure (Richter et al., submitted) produced a very similar structure but with less confidence in the third factor (eigenvalue = 0.75). The replication factor structure is given in Table 1b. This suggests that the boundaries between these factors may be difficult to draw sharply. However, we decided to proceed with a three-factor solution on the grounds that feeling relaxed may reflect low activity in the threat system, and relate to an arousal dimension whereas feeling safe, secure, and warm may reflect high activity in the soothing system. Also, as noted above, different affect systems can be highly interactive and mutually influencing, thus producing high correlations, but this should not be taken to mean that they are not different systems that may not always work harmoniously. Although our measures are perhaps not good enough to clearly distinguish these differences, it remains useful to keep these conceptual differences in affect regulation clear in one's mind. Hence, as this is very preliminary explorative work, we have chosen to maintain three factors with the hope that better measures and more focused research will clarify this in the future. We also factor analyzed the COPAS and found a very similar factor structure reported by Lubin & Whitlock (2000), with the exception of the item 'aggressive' which did not load on any factors.

The means, standard deviations, Cronbach's alphas, and correlations are given in Table 2. The means and standard deviations for the COPAS and forms of self-criticism/reassurance scale are similar to those found in previous studies (Gilbert, McEwan, Mitra, Mills, Bellew, & Irons et al., submitted; Gilbert et al., 2004). The DASS scores are lower in comparison to another student study (Gilbert, Bloomhead, & Irons, 2007).

Table 1b. Replication of Activation and Safe/Content Affect Scale factor structure.

	Factor		
	1	2	3
Lively	**0.798**	0.311	0.358
Energetic	**0.773**	0.293	0.334
Excited	**0.741**	0.408	0.444
Enthusiastic	**0.711**	0.278	0.496
Adventurous	**0.699**	0.277	0.312
Active	**0.642**	0.226	0.306
Dynamic	**0.600**	0.282	0.452
Eager	**0.578**	0.143	0.260
Relaxed	0.422	**0.845**	0.670
Calm	0.354	**0.763**	0.527
Peaceful	0.354	**0.731**	0.582
Tranquil	0.210	**0.654**	0.482
Laid back	0.170	**0.613**	0.258
Serene	0.154	**0.532**	0.244
Safe	0.364	0.500	**0.859**
Secure	0.440	0.495	**0.822**
Content	0.374	0.586	**0.635**
Warm	0.519	0.477	**0.623**

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Table 2. Correlations, means, standard deviations, and alphas.

	ACTIVE	RELAX	SAFE	CONT	JOY	LOVE	VITAL	EXCITM	FSIS	FSHS	FSRS	DEPEND	ANX	CLOSE	DEPRES	ANXIETY	STRESS
RELAX	0.29**																
SAFE	0.36**	0.49**															
CONT	0.37**	0.59**	0.71**														
JOY	0.48**	0.41**	0.59**	0.76**													
LOVE	0.24**	0.26**	0.38**	0.59**	0.56**												
VITAL	0.61**	0.28**	0.24**	0.33**	0.38**	0.14*											
EXCITM	0.65**	0.23**	0.17*	0.23**	0.22**	0.15*	0.49**										
FSIS	−0.11	−0.27**	−0.38**	−0.40**	−0.36**	−0.04	−0.10	0.12									
FSHS	−0.09	−0.22**	−0.34**	−0.39**	−0.42**	−0.06	−0.16*	0.16*	0.72**								
FSRS	0.33**	0.38**	0.56**	0.64**	0.58**	0.25**	0.29**	0.11	−0.55**	−0.62**							
DEPEND	0.12	0.09	0.32**	0.33**	0.37**	0.18**	0.12	−0.06	−0.51**	−0.46**	0.43**						
ANX	−0.16*	−0.19**	−0.39**	−0.36**	−0.26**	−0.12	−0.12	−0.06	0.52**	0.46**	−0.38**	−0.36**					
CLOSE	0.17*	0.18*	0.35**	0.34**	0.40**	0.32**	0.10	0.05	−0.33**	−0.29**	0.39**	0.50**	−0.35**				
DEPRES	−0.17*	−0.30**	−0.38**	−0.51**	−0.50**	−0.16*	−0.23**	0.08	0.57**	0.64**	−0.53**	−0.43**	0.46**	−0.27**			
ANXIETY	−0.06	−0.22**	−0.29**	−0.36**	−0.28**	−0.04	−0.09	0.09	0.52**	0.55**	−0.39**	−0.37**	0.43**	−0.29**	0.72**		
STRESS	−0.06	−0.38**	−0.33**	−0.48**	−0.39**	−0.14*	−0.20**	0.08	0.51**	0.50**	−0.38**	−0.30**	0.41**	−0.23**	0.73**	0.68**	
MEANS	21.14	14.33	11.07	36.26	17.84	32.25	20.00	14.72	19.74	20.07	4.37	17.55	14.60	16.52	5.84	5.03	8.45
SD	4.89	4.36	2.55	8.34	4.09	4.47	5.10	3.74	8.30	5.60	4.87	2.85	4.16	2.72	5.33	4.72	5.26
ALPHAS	0.83	0.83	0.73	0.93	0.91	0.82	0.81	0.72	0.90	0.85	0.86	0.76	0.70	0.59	0.90	0.84	0.86

Key: ACTIVE = Activated positive affect; RELAX = Relaxed positive affect; SAFE = Safe/content positive affect; CONT = Contentment; JOY; LOVE; VITAL = Vitality; EXCITM = Excitement; FSIS = Inadequate Self; FSHS = Hated Self; FSRS = Reassured Self; DEPEND = Adult Attachment Scale; ANX = Anxiety: Adult Attachment Scale; CLOSE = Adult Attachment Scale; DEPRES = Depression; *$p < 0.05$; **$p < 0.01$.

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Retest reliability

Thirty-five participants completed a retest after a 3-week interval. Activated and safe/content positive affects had good retest reliability, correlation coefficients were $r = 0.84$, $r = 0.77$, respectively. However, the reliability for relaxed positive affect is low ($r = 0.34$). This requires replication but it could imply that this relaxed factor is more related to state or, as far as these feelings relate to low activity in the threat system, they are more variable.

Correlation analysis

Pearson correlation coefficients for all variables are also given in Table 2.

Activation and Safe/Content Affect Scale

Importantly, the activated positive affect and relaxed positive affect subscales shared a low correlation. The relaxed subscale may be tapping positive affect in the relative absence of activation/arousal. This implies that positive affect should not be seen as one process. This is further borne out by the fact that feelings of safeness and contentment are only moderately associated with relaxed and activated positive affect.

Activation and Safe/Content Affect Scale and COPAS

The COPAS was included as a measure of convergent validity for the new scale. Activated positive affect was significantly correlated with the vitality and excitement subscales of the COPAS ($r = 0.61$ and $r = 0.65$, respectively). Safe/content positive affect correlated with the COPAS contentment subscale at $r = 0.71$. The COPAS, however, does not have a relaxed subscale but the items for relaxed are in its contentment subscale, whereas we have kept these separate. Our relaxed subscale correlated with the COPAS contentment subscale ($r = 0.59$).

Activation and Safe/Content Affect Scale and Forms of Self-Criticism and Self-Reassuring Scale

Importantly, self-criticism is not significantly linked to activated positive emotions. In contrast, feeling relaxed and feeling safe/content were negatively linked to self-criticism. In regard to one's ability to be self-reassuring when things go wrong, this was significantly associated with all three aspects of positive affect but was highly correlated with safe/content positive affect ($r = 0.56$).

Activation and Safe/Content Affect Scale and Adult Attachment Scale

As noted in the Introduction, the experience of safeness (and feeling safe) may have evolved to be communicated and experienced particularly through social relationships. We explored this via use of the Adult Attachment Scale. As can be seen in Table 2, the variable 'depending on others' is not related to activated or relaxed positive affect, but is significantly positively associated with safe/content positive affect. Anxiety in attachment has a small negative correlation with activated and relaxed positive affect but has a larger relationship with safe/content positive affect ($r = -0.39$).

These findings are also replicated with data from the COPAS. The positive emotions of vitality and excitement have no significant relationship to any of the attachment variables, whereas contentment and joy do. One would expect the fifth subscale of 'love' to be related to the attachment measures. In fact, the correlations are low, and in the case of anxious attachment are non-significant.

Psychopathology variables

The story for the psychopathology variables mirrors those of the variables discussed above. In regard to depression, all three forms of positive affect are significantly negatively related to depression. However, safe/content positive affect has a significantly higher negative correlation with depression than activated emotions (r compare: $z = 2.26$; $p = 0.01$). For anxiety and stress, relaxed and safe/content positive emotions are significantly linked but activated emotions were not. This is mirrored in the COPAS data which shows that the factors of vitality and excitement have no significant correlations with depression, anxiety, and stress, but contentment and joy are highly negatively correlated with depression, anxiety, and stress.

Regressions

The first series of standard multiple regression analyses were conducted to explore the relative contribution of activated, relaxed, and safe/content positive affects to the prediction of depression, anxiety, and stress. These are given in Table 3.

Safe/content positive affect was the only variable to emerge as a significant predictor of reduced depression and anxiety. However, the relaxed subscale did approach significance in the prediction of reduced depression. Safe/content and relaxed positive affects were significant predictors of reduced stress.

In the second series of multiple regression analyses, the contribution of activated, relaxed, and safe/content positive affects were explored in relation to the prediction of forms of self-criticism/reassurance (inadequate self, hated self, and reassured self; see Table 3). Safe/content emerged as a key predictor of reduced self-criticism and increased self-reassurance.

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Table 3. Multiple regressions.

	Activated			Relaxed			Safe/content		
Regression 1	*SE B*	β	*p*	*SE B*	β	*p*	*SE B*	β	*p*
Depression	0.08	−0.02	0.77	0.09	−0.15	0.06	0.16	−0.31	0.00*
Anxiety	0.07	0.08	0.32	0.09	−0.11	0.20	0.20	−0.30	0.00*
Stress	0.08	0.09	0.20	0.09	−0.31	0.00*	0.20	−0.21	0.01*
Regression 2									
Inadequate	0.12	0.05	0.46	0.15	−0.13	0.09	0.26	−0.33	0.00*
Hated	0.07	0.05	0.53	0.09	−0.08	0.30	0.15	−0.32	0.00*
Reassured	0.07	0.12	0.06	0.09	0.12	0.07	0.15	0.50	0.00*
Regression 3									
Depend	0.07	0.02	0.83	0.08	−0.83	0.29	0.15	0.35	0.00*
Anxious	0.07	−0.02	0.74	0.08	−0.01	0.94	0.15	−0.37	0.00*
Close	0.06	0.05	0.50	0.07	0.00	0.97	0.12	0.32	0.00*

SE B = Standard error betas; β = Standard beta coefficient; *p* = Significance, * = significant at $p \leq 0.01$.

In a third series of multiple regressions, the contribution of activated, relaxed, and safe/content positive affects were explored in relation to the prediction of attachment dimensions. Safe/content positive affect emerged as a significant predictor of the ability to depend on others and get close to others and significantly predicted lower levels of anxious attachment.

Discussion

This study explored positive affect in the light of evidence from neuroscience for two different positive affect regulating systems with different evolved functions and physiological mediators. This work distinguishes 'activating, seeking and doing' positive affect from 'contentment and social safeness' (Carter, 1998; Depue & Morrone-Strupinsky, 2005; Panksepp, 1998; Porges, 2003, 2007). Previous self-report scales of positive affect have tended to be generic and wide-ranging to capture the experience of positive affect in general (e.g., Watson et al., 1995a, b), or focused on only one aspect of positive affect (e.g., activation; Gray, 1987). However, this runs the risk of combining emotions such as, 'secure,' 'content,' and 'relaxed' (because they are often highly correlated) and assumes they reflect the activity of a single affect regulation system, when they may not. In contrast, our scale was designed to focus on specific positive affect regulators and develop a self-report measure of them.

Interestingly, although we had hypothesized that there would be two types of positive affect, our factor structure generated three factors. One associated with *activated* positive affect, a second related to *relaxed* positive affect, and a third factor was related to feelings of *safeness and contentment* positive affect. Although some theorists have suggested that positive affect can be related to either low activation or high activation (Fredrickson, 2001), neuroscience findings (Depue & Morrone-Strupinsky, 2005) and our data suggest that safeness and contentment are not simply low activation. For example, the correlation between safe/content and relaxed positive affect is only $r = 0.49$. Thus an 'arousal' dimension might need to be distinguished from a 'seeking versus contentment' dimension. A major concern is the eigenvalue for the safe/content factor. However, we wanted to maintain it on theoretical and neuroscience grounds and also to see how it would perform when correlated with other variables. As Panksepp (2007) notes, focusing on neuroscience derived constructs, rather than statistical ones, can generate new insights into the nature and functions of emotions. What is interesting is that even though its eigenvalue is less than 1, when correlated with other variables, the safe/content factor had the highest negative correlation with depression. In the multiple regressions, the safe/content factor was the key predictor of psychopathologies, self-evaluations, and attachment styles. In other words, this factor seems to be tapping an important dimension linked to psychopathology and attachment. Future research will offer better ways of tapping this dimension and distinguishing it from other positive affects and an arousal dimension. For example, not only will the affect regulation systems interact but also they might each vary on an arousal dimension, such that there can be high or low arousal in activation, contentment, and/or threat. Thus, 'feeling relaxed' might represent low arousal in activation and/or low threat and/or high arousal of contentment. This is one reason why it may be useful to separate arousal terms from affect terms.

These findings have implications for therapies, as safeness/contentment may be especially linked to well-being. Thus, helping people to experience these

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emotions can have therapeutic effects (Gilbert & Procter, 2006). It appears that different types of positive affect are linked to psychopathologies in complex ways. Although activated positive affect derived from achieving/doing is sometimes regarded as a buffer to depression and stress (Martell, Addis, & Jacobson, 2001), this data suggests that this is not the full story. Rather, it is having a characteristic profile of feeling safe and content in the world that is linked to lower stress, anxiety, and depression.

We also note that from the COPAS, the factors of joy and contentment were the positive affects most negatively associated with psychopathology, and positively associated with secure attachment, rather than love, vitality, or excitement. Hence, there is a consistent story here; that feelings of safeness and contentment are key to a number of processes associated with well-being. This may link to a bigger picture because recent research has begun to question the degree to which striving and achieving to reach goals is related to mental health. Pani (2000) has suggested that modern societies, with their focus on achieving, may be over-stimulating dopaminergic systems, making people over-reliant on achievement to experience positive affects, increasing risks of stress, exhaustion, and depression. While there are short-term pleasures in achievement, happiness may come from a different place (this is also basic to Buddhist Psychology; Dalai Lama, 2001).

This work is of course tentative, with a number of limitations including the fact that our data is derived from a predominantly young, female student sample. We cannot tell how this data will be replicated in other populations (e.g., non-students, other ethnic and age groups, and clinical samples). The eigenvalue for the third factor is of course a cause for concern, even though the items of this factor worked well and seem to be important predictors. We have explained this in terms of how affect systems may work in integrative and co-regulating ways in the brain, but of course this is speculation. Although we did not produce the two factor solution we had hypothesized, in some ways a three factor solution is more interesting and tantalizing. It has made us think more conceptually about 'types' of positive affect and how they interact with an arousal dimension. Clearly, further work is needed to help develop more precise measures of these different affect systems and their links to well-being and psychopathology.

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