

AN EXPLORATION OF DIFFERENT TYPES OF POSITIVE AFFECT IN STUDENTS AND PATIENTS WITH A BIPOLAR DISORDER

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Abstract

Objective: Depue and Morrone-Strupinsky (2005) distinguished between two different types of positive affect regulation system: 1. relates to activated positive affects such as excitement, joy and vitality; and 2. relates to positive affects associated with peacefulness, contentment and well-being, and is linked to the experience of attachment and social safeness. In addition, people can derive positive feelings from doing social things (e.g. enjoying being with friends), and non-social things (e.g. watching a sunset). The first aim of this study was to develop two scales to assess the enjoyment of social and non-social events and to explore how these relate to the two types of affect regulation. In addition, we explore how these two types of positive affect regulation system are related to measures of affective temperament linked to mood disorders. The second aim was to explore these dimensions in people who have a bipolar disorder.

Method: Students (n=202) and patients with bipolar disorder (n=49) completed a set of self-report scales measuring: social and non-social positive affect; different types of positive affect; social rank; current affective temperament and mood.

Results: Our data showed that, in both patient and student groups, non-social positive affect has few correlations with other types of positive affect and affective temperament. In contrast, the pleasures derived from social relationships are significantly related to other types of positive affect and mood linked affective temperaments.

Conclusions: Social and non-social positive affect seem to operate quite differently. It is the positive affects that we receive from our social relationships that are most significantly linked to affective temperament and social rank variables. This finding may have implications for pharmacological, psychological and social therapies.

Key Words: Affective temperament, bipolar disorder, positive affect, relationships, shame, social rank.

Declaration of interest: None

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Introduction

Bipolar affective disorder represents a spectrum of different disorders that can affect up to 5% of the population (Akiskal 1992, Akiskal et al. 2000). There is increasing evidence that people with this disorder suffer a range of cognitive, motivational and emotional difficulties, particularly in affect regulation (Phillips et al. 2003, Strakowski et al. 2005). It is also understood that systems underpinning positive and negative emotions can operate independently such that both can be high, both low, or one high and one low. For example, mixed states may represent those with high negative affect and high positive affect (Akiskal et al. 2000).

However, recent neurophysiology studies suggest that positive affect is not a single dimension or

neurophysiological system (Depue & Morrone-Strupinsky 2005, Panksepp 1998). Rather, different types of positive affect have evolved for different functions, such as indicating rewards and safeness (Gilbert 1989, Gilbert et al. 2008). Depue and Morrone-Strupinsky (2005) described two major dimensions of positive affect. The first dimension is linked to drive, arousal and seeking out resources, and underpins the social behaviours of achievement and status seeking. They suggest this system is linked to various dopaminergic subsystems. This system may be key to bipolar disorders, in that high activation can go with a sense of high status and resource seeking. During elevated mood bipolar patients are well known for their activated and energised behaviours (Johnson 2005) and also their dominant-like and status-focused social

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behaviours (Gardner 1982, Janowsky et al. 1970). Both status change (Grant et al. 1998) and hypomania (Goodwin & Jamison 1990) phenomenology have long been linked to dopamine. In contrast, during the depressed phase they lose energy, focus on feelings of being a failure and are subordinate and submissive (Gilbert et al. 2007). These observations have led to theorising that bipolar mood disorders are linked to dysregulation in systems regulating social hierarchical behaviours (Gardner 1982, Wilson 1998).

The second dimension described by Depue and Morrone-Strupinsky (2005) is linked to contentment, positive affect and feelings of wellbeing and peacefulness. Importantly, when animals are not seeking resources and are not threatened, they can enter into states of contentment and peaceful well-being. Depue and Morrone-Strupinsky (2005) suggest that endorphins and the neurohormone oxytocin play an important role in this affect system. With the evolution of mammalian caring behaviour, this system became linked to attachment behaviour. Experiences of soothing, nurturance and care stimulate oxytocin and endorphins and exert calming feelings of safeness that tone down threat, distress and activation (Carter 1998). In the light of its links to affection, caring and soothing, Gilbert (1989, 2005) and Gilbert et al. (2007) referred to this system as a 'contentment and social safeness system'. Difficulty in accessing the contentment and social safeness system has been suggested as a transdiagnostic vulnerability factor for a number of psychological problems, (Gilbert 2000, 2005; Gilbert et al. 2009). There is also evidence that therapeutic interventions targeting this system can be beneficial (Gilbert & Procter 2006, Mayhew & Gilbert 2008).

There is good evidence that people with bipolar disorder suffer from various difficulties in emotional regulation systems (Phillips et al. 2003, Strakowski et al. 2005), experience poor attachment relationships (Rosenfarb et al. 1994) and lack parental attachment or connectedness over their life-span (Rosenfarb et al. 1998). Therefore, this paper explores drive versus contentment positive affect, and non-social versus social (safeness) positive affect in relation to bipolar disorder.

A key question for us was how to measure feelings of social and non-social safeness and pleasure. Despite important work on attachment and psychopathology (Mikulincer & Shaver 2007), no such measure existed. Thus the first stage of the study involved developing and validating such a scale with a student population.

Aims

The aim of this study was to explore different types of positive affect and social rank in relation to mood in students and in patients with bipolar disorder. The types of positive affect assessed were: non-social and social (using two scales specifically designed for this study); excitement and contentment and (using the positive subscales of the Comprehensive Affect and Personality Scale). We hypothesised that the excitement/drive system would be especially active in the bipolar population, whereas, the social safeness and

contentment/soothing systems will not be particularly active or as easily accessible as it will be for the student population.

We also explored a range of social rank variables: unfavourable social comparison/feeling inferior to others, submissive behaviour, and believing that one is looked down on, (external shame). We hypothesised that social rank would relate to the drive system but not necessarily the social safeness and soothing system.

Negative affect was explored using the TEMPS scale (Akiskal 1992), which measures cyclothymia, dysthymia, hyperthymia, irritability and anxiety. The current mental state of the people with bipolar disorder was measured using the Internal State Scale (Bauer et al. 1991), which assesses activation, personal conflict, well-being and depression.

Method

Participants

Two hundred and two undergraduate psychology students (36 male, 154 female, 12 unrecorded) were recruited from the Universities of Derby, Aston and Nottingham. Their mean age was 22.69 years, (SD = 6.86).

Forty nine patients, (18 males, 31 females), diagnosed with bipolar depression were recruited from the Derbyshire Mental Health Services NHS Trust and the Manic Depression Service within Birmingham and Solihull Mental Health Trust. All patients had been given a diagnosis of bipolar disorder (ICD-10), were being treated for a bipolar disorder, were currently stable and were on mood stabilising medication (e.g., lithium). Patients were not assessed in regard to their psychiatric history in terms of whether they were classified as having bipolar I (hypomanic episode only), or bipolar II, (hypomanic episode and depressive episode). The patients' mean age was 48.30 years (SD=9.15).

The Social Safeness and Pleasure Scale (SSPS)

This scale was developed to measure the extent to which people experience their social worlds as safe, warm and soothing. The items relate to feelings of belonging, acceptance, and feelings of warmth from others, (e.g., "I feel content within my relationships", "I feel secure and wanted", "I feel a sense of warmth in my relationships with people"). Respondents rate on a five-point Likert scale the extent to which they agree with each of the 11 statements ranging from 0 (*Almost never*) to 4 (*Almost all the time*). The full scale with the instructions is given in **Table 1**.

Measures Non-Social Safeness and Pleasure Scale (NSSPS)

This scale was developed to measure the extent to which people experience pleasure from sensory, non-social activities (e.g., "listening to music", "savouring a good meal" or "watching the sunset"). As noted above,

Table 2. Factor analysis for Non-Social Safeness and Pleasure Scale

Instructions

We are interested in how people experience pleasure, positive feelings and emotions. For example, some people like to be active and “on the go,” while others enjoy “being in the moment”. Below are a series of statements about various situations. Please read each statement carefully and circle the number which indicates how much pleasure or joy it would typically give *you*.

Please use the following scale for your ratings

0 1 2 3 4

Do not enjoy/ Enjoy a lot/
No pleasure Lot of pleasure

Item no.		Factor Loading	
		1	2
10	Being still within myself	.68	.29
7	Watching the world go by	.64	.42
2	Observing things such as the sunset	.63	.23
9	Listening quietly to music	.58	.16
3	Quietly being with people I know	.57	.26
8	Doing simple things	.56	.47
11	Living day by day	.41	.39
6	Taking a lot of time to savour a good meal	.32	.18
5	Not having any particular goal to strive for	.25	.85
4	Not having to achieve anything	.32	.80
1	Pottering about with no particular aim	.45	.48
12	Going with the flow	.36	.46

inadequate”). The scale has 18 items answered using a five-point Likert scale where the participants indicate how often they feel this way, (ranging from 0 = *Never* to 4 = *Almost Always*). The OAS has high internal consistency with Cronbach’s alphas of 0.92 for the student population and 0.96 for clinical populations (Allan et al. 1994).

Submissive Behaviour Scale (SB)

This scale was developed by Gilbert and Allan (1994), refined by Allan and Gilbert (1997) and based on the work of Buss and Craik (1986). It is a 16 item scale designed to measure typical submissive behaviours in various social situations, (e.g. “I agree that I am wrong even though I know I am not”; “I continue to apologize for minor mistakes”). Respondents give the estimated frequency of each behaviour on a five-point scale ranging from 0 (*Never*) to 4 (*Always*).

The scale has been found to have a Cronbach’s alpha of 0.82 (Allan & Gilbert 1997).

The Temperament Evaluation of Memphis, Pisa, Paris and San Diego-auto questionnaire version (TEMPS-A)

This scale developed by Akiskal (1992), was designed as a self-report questionnaire to quantify affective temperament in psychiatric patients and healthy subjects. It consists of 39 items. The five subscales are: *Cyclothymic* referring to a mild form of bipolar disorder (e.g., “my ability to think varies greatly from sharp to dull for no apparent reason”); *Dysthymic* referring to a chronic depression of mood, (e.g., “people tell me I am unable to see the lighter side of things”); *Irritable* (e.g., “people tell me I blow up out of nowhere”); *Hyperthymic* referring to a gregarious, dramatic, outgoing type (e.g., “I have a gift for speech,

convincing and inspiring others”); and, finally, *Anxious* (e.g., “I am often fearful of someone in my family coming down with a serious disease”). Participants are asked to circle the items which apply to them for much of their lives. The scale has good reliability with Cronbach’s alphas of 0.91 (*Cyclothymic*), 0.81 (*Depression*), 0.77 (*Irritable*), 0.76 (*Hyperthymic*) and 0.67 (*Anxious*).

Internal State Scale

The Internal State Scale was designed by Bauer et al. (1991) to measure the severity of manic and depressive symptoms. The 15 item measure consists of four subscales. The *Activation* subscale includes items such as racing thoughts, feeling impulsive and overactive. These items can be regarded as measuring a relatively negative element of activation. The *Personal Conflict* subscale taps into negative affect related to irritability and “feeling the world is against me”. The third subscale, *Depression*, measures low positive affect and has just two items: feeling depressed and thinking nothing will ever work out. Only one subscale measures positive affect. This is called the *Well-Being* scale and taps items such as feeling capable, great inside and energised. Scores range from ‘not at all/rarely’ (0) to ‘very much so/much of the time’ (100). In this study we used a numbered system of 1–10 inviting the person to circle the number that best describes them. The Cronbach’s alphas for this scale were 0.84 for *Activation*, 0.81 for *Personal Conflict*, 0.92 for *Depression* and 0.87 for *Well-Being* (Bauer et al. 1991). This scale was given to patients but not to students.

Results

Analysis was conducted using SPSS version 14 for PCs. The data was screened for normality of the distributions and for outliers. In the student population, skewness values ranged from 0.03 to 1.33 and kurtosis values ranged from -0.00 to 1.61. In the bipolar population, skewness values ranged from 0.40 to -1.30 and kurtosis values from -0.27 to 3.31. Skewness and kurtosis were higher than the acceptable level for a normal distribution in the TEMPS variables of Irritability in patients, and Irritability and Dsythymia in students. Thus, these variables were log transformed for the purposes of further analyses.

Factor structure of the new Social and Non-Social Safeness and Pleasure Scales

Using the data collected from the student population (n=202), we conducted separate exploratory factor analyses (Maximum Likelihood) on both new scales using promax rotation. The Social Safeness and Pleasure Scale emerged as one factor, whilst the Non-Social Safeness and Pleasure Scale emerged as two separate factors: open-engagement and non-pressure. Items in the open-engagement factor refer to sensory, in-the-moment experiences with an ‘open and mindful’ engagement. The second factor focused on *non-goal*

striving and not having to achieve, thus, we labelled this factor ‘non-pressure’. However, for the purpose of analysis the scale was given a single score. Both the scales, with their factor loadings and instructions, are given in Tables 1 and 2.

Descriptive Analysis

The means, standard deviations and Cronbach’s alphas are shown in **Table 3**. Internal reliability was generally good, with the exception of the TEMPS scale, which had low Cronbach’s alphas in both student and patient populations.

Correlation Analysis

Pearson Product Moment Correlation Coefficients for different types of positive affect and affective temperament in student and bipolar groups are given in Table 3. Bipolar group statistics are presented in Italics.

Types of Positive Affect

Non-social positive affect and social positive affect shared only small correlations in both student and patient populations, suggesting that these are tapping different aspects of positive affect. Non-social positive affect had only a small positive correlation with joy, and a small negative correlation with vitality in the patient population, and had small positive correlations with contentment and love in the student population.

Looking at the results for the positive feelings associated with relationships (as measured by the Social Safeness and Pleasure Scale) it can be seen that for the bipolar group there are robust correlations with contentment and joy, and in students it is a similar story. Interestingly, this kind of positive experience is not linked to vitality or excitement in either students or the bipolar group. This again indicates the importance in distinguishing between different types of positive affect.

Types of Positive Affect and Affective temperament

In the bipolar group, social positive affect, contentment and joy were negatively correlated with cyclothymia and dysthymia. Non-social positive affect shared a small negative correlation with cyclothymia. This again suggests that it is this social soothing system that is important. In relation to hyperthymia however, there is no relationship to those types of emotion, but there is a moderate correlation with excitement. This opens the intriguing possibility that depressive and hyperthymic aspects of the disorder might be regulated by different positive affect systems, rather than one becoming over or under active.

We can see that in students, social positive affect along with the COPAS measures of positive affect are linked to many of the TEMPS variables. One way of thinking about this is that positive affects may have more of a buffering effect against mood dysregulation as measured by the TEMPS. Probably one of the standout findings is how little non-social positive affect

Table 3. Means, standard deviations, alphas and correlations between positive affect and affective temperament (bipolar group statistics are in *italics*)

	Non-social	Social	Content	Joy	Love	Vital	Excite	Temp_C	Temp_H	Temp_A	Temp_D	Ten
Non-social		.37*	.25	.38*	.08	-.31*	.01	-.29*	.03	.13	-.05	
Social	.18*		.52**	.39**	.24	.11	.01	-.47**	.19	-.09	-.46**	
Content	.16*	.53**		.57**	.29*	.35**	.11	-.45**	.13	.02	-.44**	
Joy	.08	.49**	.76**		.38*	.42**	.49**	-.30*	.21	-.02	-.41**	
Love	.18*	.25**	.52**	.44**		.39**	.09	-.14	.01	-.12	-.25	
Vital	-.08	.07	.49**	.46**	.24**		.49**	-.05	.17	-.10	-.21	
Excite	-.03	-.01	.39**	.36**	.20**	.46**		.26	.44**	.03	-.14	
Temp C	-.06	-.25**	-.30**	-.34**	-.15*	-.29**	-.07		.28*	.05	.38**	
Temp H	.09	.21**	.31**	.34**	.16*	.19**	.38**	-.13		-.03	-.28*	
Temp A	-.02	.06	.02	-.01	-.03	-.11	-.11	.29**	-.14		.30*	
Temp D	-.02	-.36**	-.30**	-.31**	-.12	-.33**	-.13	.41**	-.19**	.29**		
Temp I	-.09	-.21**	-.29**	-.24**	-.21**	-.27**	.09	.40**	.06	.12	.31**	
Means (SD)	45.43 (9.08) 43.56 (7.44)	39.88 (9.67) 39.76 (7.72)	32.13 (10.00) 34.03 (7.83)	16.09 (5.39) 17.45 (4.06)	30.65 (5.77) 30.69 (5.31)	18.93 (5.49) 19.85 (5.72)	11.83 (3.69) 13.19 (3.29)	5.61 (3.78) 4.30 (2.78)	2.92 (1.89) 2.34 (1.97)	1.02 (.97) .94 (1.01)	1.90 (1.61) 1.29 (1.59)	1.96 1.62
Alphas	.84 .82	.91 .91	.93 .91	.93 .89	.81 .85	.80 .88	.63 .66	.87 .72	.56 .66	.46 .59	.53 .68	

Key: Non-Social= Non-social safeness and pleasure scale; Social=Social safeness and pleasure scale; Content=contentment (COPAS); Joy (COPAS); Love (COPAS); Vital= Vitality (COPAS); Excite= Exciter
Cyclothymia; Temp_H=Hyethermic; Temp_A=Anxious; Temp_D=Dysthymic; Temp_I=Irritable.

(being able to enjoy a sunset or good meal), is linked to other positive affects and measures on the TEMPS.

Types of Positive Affect, Social Rank Variables and Affective temperament

In both the student and bipolar group, the rank variables operated as expected and in line with previous research. For both the student and bipolar groups, social positive affect is clearly linked to social comparison, submissive behaviour and feeling that others look down on you (OAS) but once again, non-social positive affect bears no relationship to these rank-related variables.

In regard to the TEMPS, social comparison is related to cyclothymia and dysthymia with a tendency for hyperthymic affective temperament to be linked to social comparison positively, indicating a tendency toward superiority thinking. For the bipolar group external shame correlated with cyclothymia and dysthymia. This mirrors a similar pattern in the students.

Positive Affect, Internal State Scale and Social Rank Variables

We also gave the Internal States scale to the bipolar group and once again we find that the non-social positive affect scale bears little relationship to measures of mood, other than a small correlation with depression. For the social positive affect scale, personal conflict is negatively related, as is depression, but well-being has a robust correlation with social positive affect.

Discussion

This study explored different types of positive affect in relation to affective temperament and social rank measures in a group of students and in a group of patients with bipolar disorder. We found that social and non-social positive affect operate quite differently. It is the positive affects that we receive from our social relationships that are most significantly linked to affective temperament and social rank variables. This fits with increasing research evidence, showing the importance of attachment experiences which stimulate experiences of safeness and social connectedness in the regulation of mood and brain maturation (Cozolino 2007).

We also note that hyperthymia correlated with excitement in the bipolar group. In the student group hyperthymia and irritability correlated with excitement and vitality. This again raises the question of how these different affective temperaments are linked to the drive and activation system, in contrast to the contentment and social safeness system which emerges from social relationships.

Looking at the social rank variables, feeling low rank, behaving submissively and believing that others look down on you are significantly negatively associated with social pleasures, but not with non-social ones. These rank variables are also significantly negatively linked to the positive emotions of contentment and joy, but not (apart from a small correlation between vitality and social comparison), to the more activating emotions of vitality and excitement. This data would appear to indicate that feeling inferior, as measured by social comparison, has a major impact on

contentment and social safeness and may indicate a complex relationship between social rank and attachment systems. For example, Gilbert (2005) suggested that individuals who do not experience safeness in early attachment can go on to become more rank focussed and wary of the power of others. This can then interfere with a sense of connectedness to others. In regard to mental state, it again appears that it is positive feelings associated with social relationships that are particularly linked to these variables. For example, in the bipolar group well-being was strongly correlated with feeling socially safe, but is not associated at all with non-social positive affect.

This study illuminates complex patterns of different types of positive affect in relation to affective temperament and affective traits. Clearly, it is at an early stage of research, where future work may seek new measures for these domains and larger populations.

To further advance this work would involve the use of more complex methodologies, and would explore these processes in patients who are more symptomatic. We hope to have raised the intriguing possibility that exploring positive affect using the Depue and Morrone-Strupinsky (2005) model in these populations could offer new insights into the nature of regulation of positive affect. New insights into these different types of positive affect would have impacts for pharmacological, psychological and social therapies. This is especially so, given that much pharmacological research in mood disorders is focussed on the dopamine rather than the endorphin/oxytocin system, although, of course, these are all highly interactive systems.

A limitation of this study is that the instructions on the new social and non-social safeness and pleasure scales differed (i.e., the social safeness and pleasure scale asks about the frequency of feelings of social safeness, whereas the non-social positive affect scale asks about how much pleasure is experienced from non-social activities). Our aim is to rectify this in a future study, although we suspect that the results will not be affected. There are also concerns about the number of correlations and the possibility of type I errors, the size of the sample and different stages of illness. In addition, there are concerns about the reliability of the short-form TEMP-A scale (in this study $\alpha=.46-.87$ in patients and $\alpha=.59-.72$ in students). The alphas obtained here are lower than previous studies using the full (110 item) version of the scale, for example Rozsa et al. (2008) found alphas ranging from $\alpha=.65-.81$. Another concern is that, while clinicians advised that participants were not acutely ill, were stable and able to understand and participate in the study, the measure we used for the degree of remission was the internal state scale, rather than full psychiatric assessment. In addition, we did not explore full medication history.

Despite this, however, there are tantalising suggestions here that the drive system and contentment system might work quite differently in bipolar disorders. Gonda et al. (2006) found a strong association between the TEMPS subscales (except hyperthymia), and the short form of the 5HT (serotonin) allele. In contrast, hypomania was found to be characterised by increased activity in dopaminergic pathways. Findings such as these suggest that distinct neurophysiological affect

regulation systems may underlie the depressive and hyperthymic affective states in bipolar patients. Indeed, Akiskal et al. (2003) found that there are even distinct affect systems operating with bipolar I and bipolar II. They found that bipolar II patients with cyclothymia tended to display significantly higher irritability and risk taking than the driven and euphoric affects of hypomania. We need better methodologies linked to self-report, physiological and neurophysiological assessments to try and tease apart how these different types of positive affect operate in mood disorder. If there is a disturbance in the accessibility of the contentment and social soothing aspect of positive affect, this may well be an interesting target for intervention.

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