

Positive Affectivity: Specificity of Its Facet Level Relations with Psychopathology

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Abstract This study sought to explicate the strength and direction of the relations between specific facets of positive affectivity (joviality, self-assurance, attentiveness, and serenity) and a broad range of psychopathology. Internalizing, externalizing, mania, and psychoticism were assessed using both self-report and interview measures in a diverse community sample (N = 255; Mage = 45.1 years; 58.4 % African American, 33.3 % Caucasian). Our results indicated that these positive affectivity facets demonstrated distinctive patterns of relations with psychopathology and exhibited incremental predictive power beyond that explained by negative affectivity. In particular, self-assurance displayed notable positive relations with externalizing and mania, emerging as a somewhat maladaptive variant of positive affectivity. Joviality also related positively to manic symptoms. In contrast, serenity and attentiveness related negatively to such indicators and to psychopathology more generally. These data provide strong evidence that incremental information is gained by examining positive affectivity–psychopathology relations at the facet level.

Keywords Positive affect · Positive emotionality · Facets · Psychopathology · Negative affect

Introduction

Considerable progress has been made in the last 30 years in explicating the affective correlates of psychological symptoms and disorders (Watson and Naragon-Gainey 2010, 2014). Affective experience is defined by two broad, higher order dimensions of positive affect/activation and negative affect/activation (Watson et al. 1999), and research using self-report, ecological momentary, behavioral, and physiological methods of assessment all have contributed to our understanding of these two general domains and their correlates (DeYoung and Gray 2009; Ebner-Priemer and Trull 2009; Fredrickson and Joiner 2002).

Positive affect reflects individual differences in pleasant and pleasurable feelings and is closely linked to the five-factor model personality trait of extraversion (Eaton and Funder 2001). Likewise, negative affect correlates very strongly with neuroticism, as both assess individual differences in sadness, fear, and hostility (Clark and Watson 1999a). Whereas negative affect demonstrates moderate to strong positive relations with a range of psychopathology, positive affect displays more specificity in the *direction* of its relations, as it shows notable negative relations with depression and schizotypy, but positive relations with bipolar disorder/mania (Fredrickson et al. 2003; Watson and Naragon-Gainey 2010). Positive affect also demonstrates considerable specificity in the *strength* of its psychopathology relations; for example, it shows comparatively stronger relations with depression than with most symptoms of anxiety, with the differences between depression and social anxiety being smaller than those between depression and other anxiety disorders (Watson and Naragon-Gainey 2010, 2014).

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Specific Facets of Affect and Their Relevance to Psychopathology Research

Beyond these two general affect factors, emotional experience also can be studied at a more specific, lower order facet level. Therefore, affective experience is conceptualized hierarchically, with the general positive affect and negative affect dimensions each consisting of several related, but distinct, lower order facets (Tellegen et al. 1999). Although there is not a consensus on positive affect's facet level structure (Stanton and Watson 2015), it appears to be defined by at least three dimensions: (a) high arousal or activated positive affect (e.g. liveliness, boldness), (b) relaxation/serenity, and (c) social warmth or a need for affiliation with others (Gilbert et al. 2008; Kelly et al. 2012; Watson 2000a). A number of studies have linked dimensions of positive affect—and activated positive affect especially—to reward seeking and to the dopaminergic system, which underlies motivation and approach behavior (see DeYoung 2013); furthermore, neurophysiological research also suggests that positive affective states reflecting a need for affiliation are related closely to opiate and oxytocin functioning (Depue and Morrone-Strupinsky 2005).

Recent research also indicates that high-arousal variants of positive affect are related to activation of the sympathetic nervous system, which may facilitate motivation and reward-seeking (Shiota et al. 2011). Indeed, from an evolutionary perspective, positive affective states related to reward seeking appear fundamental in facilitating motivation to acquire resources necessary for survival (DeYoung 2013; Panksepp 2010; Watson 2000a). In contrast, positive affective states of contentment and security appear more closely intertwined with the parasympathetic nervous system, as they are indicators of consummatory and affiliative needs having been satisfied (Depue and Morrone-Strupinsky 2005).

Relations Between Facets of Positive Affect and Psychopathology

The limited research examining the relations between facets of positive affect and psychopathology suggests that bipolar disorder shows comparatively stronger positive relations with high arousal, reward seeking positive emotions than with other aspects of positive affect (Gruber 2011). Additionally, Watson et al. (2011) found that diagnoses of major depression showed a stronger negative relation to joviality (e.g., joyful) than to self-assurance (e.g., bold) and attentiveness (e.g., alert). Relatedly, Stanton and Watson (2015) found that joviality showed comparatively stronger relations with depressive symptoms than did excitement seeking (e.g., feeling fearless);

conversely, excitement seeking related more strongly to manic symptoms than did joviality. These data suggest that specific lower order analyses may provide substantial incremental explanatory power beyond that obtainable at the general domain level (for a discussion of the value of facet level analyses, see Paunonen 2003).

Limitations to the Current Positive Affective-Psychopathology Literature

This small collection of research indicates that specific positive affect facets show divergent patterns of associations with psychopathology (e.g., joviality strongly predicts depression; reward seeking strongly predicts mania), even though they are interrelated components of the same broader dimension. However, this existing body of evidence is limited both in its scope and depth, as previous studies have examined the relations between facets of positive affect and a relatively narrow range of psychopathology. It is unsurprising that this literature is small, given that positive affective dysfunction in psychopathology has received much less study than that for negative affect (Gruber et al. 2014).

For example, Watson et al. (2011) examined positive affect's relations with a range of internalizing psychopathology, but they did not assess externalizing (e.g., antagonism, disinhibition, and substance use), mania, or psychoticism. In a relatively distinct literature, Gruber (2011) reviewed research focusing explicitly on positive affect and bipolar disorder. Stanton and Watson (2015) examined associations with a somewhat broader range of psychopathology, but—similar to Watson et al. (2011)—their study focused primarily on relations with internalizing psychopathology. Consequently, even though these studies provide insight into the relations between positive affect facets and specific types of psychopathology, they are far from comprehensive and paint an incomplete picture. Research examining the associations between specific positive affect facets and externalizing psychopathology representing the domains of antagonism (e.g., aggression, callousness) and disinhibition (e.g., irresponsibility, risk taking) is particularly sparse, marking a salient gap in this literature.

The Current Study

Given these limitations, the primary goal of this study was to explicate the strength and direction of the relations between specific positive affect facets and a range of psychopathology. We hope to build on the small body of research indicating that the relations for positive affect facets vary in direction and in magnitude with specific

symptoms and disorders. In doing so, we aim to benefit future research by identifying which specific aspects of positive affective dysfunction are implicated across internalizing, externalizing, bipolar, and psychotic disorders. Therefore, the current study adds to the literature on this topic in several important ways.

First, the relations between negative affect and psychopathology have been widely studied, such that this dimension is now embedded into conceptualizations of a number of disorders within the Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders (*DSM-5*; American Psychiatric Association 2013); however, the inclusion of positive affective content into *DSM-5* criteria is much more limited, largely because it has received comparatively little study. This study provides rich data regarding relations between positive affect facets and a range of psychopathology, which will serve as a springboard for future research in this domain.

Relatedly, as discussed earlier, the small body of previous facet level research has focused on the relations between positive affect and a limited range of psychopathology (e.g., reporting only the relations between positive affect and depression). In contrast, the current study provides a more comprehensive analysis by comparing/contrasting relations with internalizing, externalizing, mania, and psychoticism at both the symptom and diagnostic levels. Additionally, whereas most previous research examining the positive affective correlates of psychopathology has relied solely on self-report data, this study also includes interview measures, thereby allowing us to examine the robustness of associations across different methods of assessment.

We focus here on the positive affective facets of joviality, self-assurance, attentiveness, and serenity, as modeled by Watson and Clark's (1999) Positive and Negative Affect Schedule - Expanded Form (PANAS-X). We focus on this conceptualization because (a) the PANAS-X has been widely used since its publication (over 1750 citations according to Google Scholar as of November 2015); (b) Watson and Clark (1999) present data from a number of samples indicating that this facet level structure is robust; and (c) these facet level scales have demonstrated strong internal consistency and considerable convergent and discriminant validity across studies.

Study Predictions

Based on the limited body of previous research, we made several general predictions. First, we predicted that the facet of joviality—which is defined by elements of joyfulness and liveliness—would show strong negative relations to depression and would show comparatively stronger relations than other facets to internalizing psychopathology

more generally. We expected self-assurance to relate *positively* to mania and externalizing psychopathology given that this facet is related to excitement seeking, which has been shown to have positive associations with both psychopathology domains (Gruber 2011). We also predicted that joviality would display somewhat weaker positive links to mania, whereas attentiveness and serenity should show relatively weak relations with mania and externalizing psychopathology. More generally, we expected that attentiveness and serenity would show weak to moderate psychopathology relations, and would show less overall predictive power than joviality and self-assurance. Lastly, we predicted that the positive affective facets would show fairly weak relations with psychoticism, but that they would relate more strongly to negative symptoms of schizotypy/schizophrenia (e.g., restricted affectivity) than to the positive symptoms (e.g., perceptual dysregulation).

Method

Participants and Procedure

Participants ($N = 255$) were recruited from the greater South Bend, IN metropolitan area. Participants from previous studies conducted at the Center for Advanced Measurement of Personality and Psychopathology who had indicated interest in future studies were contacted first. Participants from previous studies primarily were outpatients who were recruited from the Oaklawn Community Mental Health Center and community adults recruited from listservs, newsletters, and mass e-mails (see Watson et al. 2013). Other community members who inquired about the study and met the participation criteria (age 18 or older, own legal guardian, comfortable reading and writing in English) comprised the rest of the sample. Participants were not screened for psychopathology and simply had to meet these inclusion criteria to be eligible to participate. Prior to beginning the study, participants were provided with detailed information regarding the study's procedures (i.e., participation will require completing a large number of questionnaires and a brief clinical interview), as well as general information regarding its purpose (i.e., improving our understanding of personality's relations to mental health). Informed consent was obtained from all participants after they reviewed the materials explaining the study's procedure and goals.

The study measures were completed in two sessions. Session 1 consisted of the first half of a clinical interview and an extensive battery of self-report personality measures. Session 2, which was completed roughly 3 weeks after the first session (mean interval of 20.3 days), consisted of the remainder of the clinical interview and a wide

range of self-report psychopathology measures. In addition, participants were given the option to complete a supplemental battery of self-report affect and psychopathology measures off-site (or at home) after completing Session 1, which they then submitted upon their return at Session 2. Although the larger study sample consisted of 438 participants (see Watson et al. 2015a, b), only 255 participants completed all three batteries (Session 1, Session 2, and the optional set of measures between them). As this study uses data from many of the scales completed as part of this optional battery, the final participant sample used for analyses was $N = 255$ (although sample sizes for some analyses vary slightly due to missing data).

This subsample of 255 participants was similar to the larger overall study sample of 438 participants with regard to age and gender composition, but it consisted of a higher proportion of participants who identified as Black/African American (see Watson et al. 2015a, b). Indeed, the majority of the final sample was Black/African-American (58.4 %); a third of the participants were Caucasian (33.3 %), with small numbers representing other minority groups (4.3 % multiracial, 2.0 % American Indian, .4 % Native Hawaiian). Participant mean age was 45.1 years ($SD = 13.1$), and 68.6 % of the sample was female. Over a quarter of the participants reported having seen a therapist for mental health issues in the past (27.8 %) and a smaller percentage (14.1 %) reported that they were currently receiving therapy for psychological issues. Additionally, just over a fifth of the participants were currently taking prescribed medication (22.0 %) for psychological problems, and the majority of the sample was unemployed (63.9 %). Relatedly, nearly half of the participants (122 of 255, or 47.8 %) met criteria for at least one of the *DSM* diagnoses we examine in this study. Thus, despite not being fully clinical in nature, this sample was likely to report a relatively wide range of psychopathology.

Positive Affectivity Scales

As noted, the PANAS-X (Watson and Clark 1999) was used to measure facets of positive affectivity. It includes scales assessing the positive affects of Joviality (8 items; e.g., *enthusiastic*), self-assurance (6 items; e.g., *bold*), attentiveness (4 items; e.g., *alert*), and serenity (3 items; e.g., *relaxed*). Participants also completed the PANAS-X general Negative Affect scale¹ (10 items; e.g., *afraid*, *nervous*). Participants indicated the extent to which they have experienced each affect term “in general” or “on average” on a 5-point scale ranging from *very slightly* to

extremely. Thus, these ratings reflect stable, enduring individual differences in trait affectivity (Watson 2000a), as opposed to short-term state affect.

Self-Report Psychopathology Measures

Overview

The scales included in this study were selected from the larger battery administered in Session 2 (as well as the optional inter-session battery), which included symptoms of other forms of psychopathology that will not be discussed here (e.g., obsessive-compulsive disorder, unusual sleep experiences, hoarding, specific phobias); examining relations with all of the psychopathology measures included in the study battery (i.e., more than 130 scales and subscales overall) would prove unwieldy. In selecting measures for inclusion, we focused primarily on psychopathology markers that (a) were predicted to show interesting patterns of associations with positive affectivity facets on either theoretical (e.g., distractibility, impulsivity, narcissism) or empirical grounds (e.g., depression, social anxiety, schizotypy, mania) and (b) also were assessed in the clinical interview, which allowed us to examine patterns of relations with positive affectivity across assessment methods (i.e., self-report vs. interview).

We simplified our results further by creating symptom composites, which consisted of redundant, strongly correlated scales. Scales used to create these aggregated symptom composites were standardized before being summed so that they would be equally weighted. We subsequently report coefficient alphas for each of these composites; these values were computed using each of the scales entered into each composite as item-level indicators (e.g., if four scales assessing anxiety symptoms were combined to form a composite, then the coefficient alpha for this composite would be computed using total scores from each of these four scales as indicators). These composites and other self-report psychopathology measures are discussed in more detail in the following sections. All of the following psychopathology scales were administered at Session 2 unless otherwise specified.

Internalizing Symptoms

The Dysphoria scale (10 items; e.g., “felt depressed”) from the Expanded Version of the Inventory of Depression and Anxiety Symptoms (IDAS-II; Watson et al. 2012) and the Patient Health Questionnaire (PHQ-9; Kroenke et al. 2001) were used to provide assessment of depressive symptoms. The PHQ-9 assesses *DSM-IV/DSM 5* major depressive disorder (MDD) criteria, and scores for its nine items were summed together to create a continuous measure of

¹ Participants were not administered the specific PANAS-X negative affect facet scales, which prevented us from examining relations with these measures.

symptom severity. In addition to these depression measures, we also included the Personality Inventory for *DSM-5* (PID-5; Krueger et al. 2012) Anhedonia scale in our analyses (8 items; e.g., “never enjoy life”), as loss of interest and pleasure is a core feature of depression and should relate strongly to positive affectivity.

The Generalized Anxiety Disorder Questionnaire-IV (GADQ-IV; Newman et al. 2002) was used to model GAD. The GADQ-IV was created to model diagnostic criteria and to provide an analogue diagnosis of GAD. Its items also can be scored dimensionally, and the GADQ-IV data presented in our analyses were scored in this fashion.

Composite measures were created for social anxiety, panic, and posttraumatic stress disorder (PTSD), as the study battery included several highly correlated measures of each type of symptom. The social anxiety composite consisted of (1) the 5-item Social Phobia scale from the Fear Questionnaire (FQ; Marks and Mathews 1979), (2) the 6-item IDAS-II Social Anxiety scale, (3) the 10-item Social Phobia scale from the Albany Panic and Phobia Questionnaire (APPQ; Rapee et al. 1994/1995), and (4) a 10-item Social Anxiety scale derived from the Schizotypal Personality Questionnaire (Raine 1991), which was created based on structural analyses indicating that these items define a common factor (Chmielewski and Watson 2008). The scales defining this composite tap content defining a range of social anxiety symptoms, including self-consciousness and marked anxiety in social situations. Correlations among the four measures defining this composite ranged from .52 to .67 (mean $r = .61$; social anxiety composite $\alpha = .86$).

Next, the panic composite—which was defined by scales assessing item content related to a range of cognitive (e.g., fear of losing control) and physiological symptoms (e.g., trembling, racing heart) of panic disorder—was comprised of three strongly related measures from our battery: (1) an abbreviated, 6-item version of the Panic Attack Symptom Questionnaire (Watson 2000b), (2) a reduced, 9-item version of the Anxious Arousal scale of the Mood and Anxiety Symptom Questionnaire (Watson et al. 1995), and (3) the 8-item IDAS-II Panic scale. Correlations among the panic measures ranged from .62 to .71 (mean $r = .66$; panic composite $\alpha = .86$).

Third, our PTSD composite consisted of (1) the five intrusions items and two avoidance items from the PTSD Checklist-Civilian Version (Weathers et al. 1993), and (2) an aggregated score based on the IDAS-II Traumatic Avoidance and Traumatic Intrusions scales (4 items each); these scores correlated .73 with one another (PTSD composite $\alpha = .84$). The item content defining this composite assessed both (a) intrusive memories, dreams, and flashbacks related to experiencing traumatic events and (b) avoidance of reminders of traumatic events.

Psychoticism

First, we included select scales assessing psychosis/schizotypy from the PID-5 to model a number of psychotic symptoms, including the positive symptoms of Eccentricity (13 items; e.g., “say things others find odd”), Cognitive and Perceptual Dysregulation (12 items; e.g., “sometimes objects seem to be a different shape than usual”), and Unusual Beliefs and Experiences (8 items; e.g., “believe people can move things with their minds”). These three PID-5 scales were aggregated to form a positive schizotypy composite (inter-scale correlations ranged from .68 to .82 with a mean $r = .75$; positive schizotypy composite $\alpha = .90$). The combined item content from these three scales assess a range of positive schizotypy symptoms, including eccentric behavior and beliefs, disorganized thinking, and altered perception. Next, we included the PID-5 Suspiciousness scale (7 items; e.g., “always on guard for someone trying to harm me”) to assess paranoid feelings of mistrust. Finally, negative symptoms of schizotypy were assessed using the PID-5 Restricted Affectivity (7 items; “difficult for others to know what I’m feeling”) and Withdrawal scales (10 items; e.g., “go out of my way to avoid group activities”).

Externalizing Symptoms

We used scales from the PID-5 to assess a range of externalizing symptoms. The Impulsivity (6 items; e.g., “act totally on impulse”) and Irresponsibility scales (7 items; e.g., “don’t keep promises”) were combined to form a disinhibition composite ($r = .58$ between these scales; disinhibition composite $\alpha = .73$); similarly, we combined Callousness (14 items; e.g., “don’t care if others suffer”), Deceitfulness (10 items; e.g., “lying comes easily to me”), and Manipulativeness (5 items; e.g., “good at conning people”) to create an antagonism composite (correlations among scales ranged from .60 to .80 with a mean $r = .70$; antagonism composite $\alpha = .87$). These three scales assess a range of antisocial attitudes and behaviors. Lastly, the Grandiosity (6 items; e.g., “have outstanding qualities that others don’t possess”), Attention Seeking (8 items; “like standing out in a crowd”), and Risk Taking scales (14 items; e.g., “do want I want regardless of risk”) also were included as individual indicators of externalizing tendencies.

In addition, participants completed the Alcohol Use Disorders Identification Test (AUDIT; Saunders et al. 1993) and the Drug Use Survey (DUS; Clark and Watson 1999b) to assess substance use. The AUDIT (10 items) assesses drinking frequency and consequences of drinking, whereas the DUS (10 items) asks participants to indicate how many times they have used marijuana, cocaine,

amphetamines, diet pills, tranquilizers, psychedelics, narcotics, amyl/butyl nitrates, inhalants, and ecstasy.

Bipolar/Manic Symptoms

Manic symptoms were assessed using the IDAS-II Mania (5 items, e.g., “thoughts were racing”) and Euphoria scales (5 items, e.g. “elated for no reason”). These scales relate moderately to strongly with each other ($r = .46$ in this sample), but they show different correlates with emotionality. Mania shows comparatively stronger relations with negative emotionality, whereas Euphoria relates more strongly to elevated positive emotionality (Watson et al. 2012). Thus, these scales were not aggregated and were analyzed separately.

In addition, participants completed the 48-item Hypomanic Personality Scale (HPS; Eckblad and Chapman 1986) in the supplemental battery between Sessions 1 and 2. Analyses of the HPS indicate that its items are optimally assessed using a 3-factor structure of Social Vitality (19 items; e.g., “life of the party”), Mood Volatility (13 items, e.g., “feel speeded-up and irritable”), and Excitement (7 items, e.g., “others describe me as hyper”; Schalet et al. 2011). Research suggests that these subscales show distinctive patterns of relations with affectivity (Watson and Naragon-Gainey 2014); thus, we report results on these three subscales separately.

Narcissism

The 40-item version of the Narcissistic Personality Inventory (NPI; Raskin and Terry 1988) also was completed by participants in the supplemental battery between Sessions 1 and 2. The NPI assesses trait narcissism as presented in *DSM-III*, and it has been widely used in narcissism research. Participants responded to the items using a forced-choice format asking them to indicate which of two statements better described them.

Interview Measures of Psychopathology

We obtained diagnostic information using the Mini-International Neuropsychiatric Interview (M.I.N.I.; Sheehan et al. 1998), a structured clinical interview assessing symptoms of *DSM-IV* and *ICD-10* disorders. The M.I.N.I. was adapted (with permission of the author) to incorporate changes for *DSM-5*.² Participants (prevalence rates for each diagnosis assessed in our sample are in parentheses) were administered

the panic (9.8 %), PTSD (7.8 %), social anxiety (7.8 %), and alcohol (18.0 %) and substance (non-alcohol; 11.0 %) use disorder modules in Session 1, and the dysthymia (8.4 %), MDD (16.8 %), GAD (15.6 %), mania (9.2 %), and psychotic disorder (6.0 %) modules in Session 2.

Interviews at both sessions were conducted by graduate students and advanced undergraduate students who completed extensive training on the M.I.N.I. Training consisted of an overview of basic clinical skills, instructions for following the M.I.N.I. administration guidelines for each disorder and each individual interview item, and detailed explanations of the criteria for each disorder assessed. The graduate students conducting the interviews had previous experience with clinical interviewing and with administering the M.I.N.I., and they provided training for the undergraduate students. All of the undergraduate students observed three administrations of interviews conducted by a graduate student, and they also were required to be observed administering the interview three times before they were allowed to conduct interviews alone. The interviews were audiotaped in order to assess interrater reliability. A second rater independently scored 39 of the Session 1 interviews and 34 of the Session 2 interviews (due to audiotape problems, $N = 38$ and 33 , respectively, for several disorders). The kappa for psychotic disorder (.65) indicated good interrater reliability (see Cicchetti 1994); values for all other ratings were in the excellent range, as kappas ranged from .77 to 1.00.

Results

Overview of Positive Affectivity and Psychopathology Analyses

We related the positive affectivity facet scales to both the self-report and interview measures of psychopathology in order to explicate the associations between the positive affectivity facets and psychopathology. Correlations with the self-report psychopathology scales are standard Pearson correlations, but polyserial correlations—which are used to estimate the linear association between continuous and ordinal variables—are reported with the dichotomous interview variables. Polyserial correlations were used because they retain the relative rank order provided by Pearson correlations, but are unaffected by prevalence rates (Olsson et al. 1982). Thus, they allow for more straightforward comparisons across dichotomous indicators of psychopathology (i.e., diagnoses), where prevalence rates may differ substantially. Positive correlations with the interview variables indicate that higher scores on a positive affectivity facet were associated with an increased likelihood of meeting disorder criteria.

² This study was ongoing when *DSM-5* was finalized. Our version of GAD included proposed changes that were later rejected by the American Psychiatric Association, so that our version of the GAD diagnosis differs slightly from what is presented in *DSM-5*.

Table 1 Correlations among the positive affectivity facets and negative affectivity

Factor	1	2	3	4	5
1. Joviality	–				
2. Self-assurance	.72	–			
3. Attentiveness	.67	.65	–		
4. Serenity	.62	.50	.52	–	
5. Negative affectivity	–.41	–.27	–.36	–.56	–

$N = 255$. Correlations $\geq .150$ are highlighted. All correlations were significant at $p < .0001$

We also conducted regression analyses to identify the unique predictive power of each facet, because the positive affectivity facets were correlated with each other. As seen in Table 1, the four facets were strongly inter-correlated (r s ranged from .50 to .72), with an average inter-facet correlation of .61. The facets generally correlated moderately with Negative Affect, with the exception of serenity, which correlated more strongly ($r = -.56$). Due to the strong relation between serenity and negative affect, we also included this latter variable in our regressions to determine to what extent serenity—and other facets—demonstrated incremental predictive power beyond that for general negative affectivity.

We report standardized beta weights from multiple regression analyses for the self-report psychopathology scales, and odds ratios (ORs) from logistic regression analyses with the dichotomous interview ratings. All four positive affectivity facet scales and the general negative affect scale were entered simultaneously as predictors in all regression analyses, which allowed us to identify the unique, incremental predictive power of each scale when predicting indicators of psychopathology. In the logistic regressions, an OR significantly less than 1.00 indicates that higher scores on a facet were associated with a reduced likelihood of receiving a diagnosis (i.e., lower levels of psychopathology), whereas an OR significantly greater than 1.00 indicates that higher facet scores were associated with an increased likelihood of receiving a diagnosis (i.e., greater psychopathology). Scores on the four positive affectivity facet scales and the general negative affect scale were standardized prior to conducting the logistic regressions so that all of the scales were on a common metric.

Correlations Between the Positive Affectivity Facets and Psychopathology

Our correlational analyses examining the associations for the positive affectivity facets (i.e., joviality, self-assurance, attentiveness, serenity) with psychopathology (see Table 2 for associations with self-report psychopathology and

Table 3 for associations with the interview variables) indicated that these facets displayed similar patterns of relations with psychopathology in many ways. Therefore, we provide a brief summary of these relations here, and discuss the regression analyses in more detail subsequently, as these latter analyses indicated distinctive patterns of relations and considerable predictive power for the positive affectivity facets, even when taking negative affectivity into account.

As can be seen in Tables 2 and 3, all four positive affectivity facets generally demonstrated robust negative correlations with both self-reported and interview-rated internalizing psychopathology. Correlations with other psychopathology domains (i.e., mania, externalizing, psychoticism) tended to be weaker in magnitude, although it also is noteworthy that the positive affectivity facets—and Joviality and self-assurance in particular—correlated positively with indicators of mania (e.g., IDAS-II Euphoria and HPS Social Vitality) and externalizing psychopathology (e.g., the NPI) in some instances. As was the case for the positive affectivity facets, negative affectivity demonstrated its strongest correlations with internalizing psychopathology (e.g., IDAS-II Dysphoria; the GADQ-IV).

Regression Results Predicting Psychopathology from the Positive Affectivity Facets

Mania/Bipolar

The results from the regression analyses are displayed in Tables 4 (standardized beta weights from the multiple regressions) and 5 (ORs from the logistic regressions). The regression results predicting mania symptoms demonstrate the value of a facet-based approach, as the positive affectivity scales displayed considerable specificity in their relations with self-report measures. As predicted, these data indicate that joviality and self-assurance show very different relations with manic symptoms than do attentiveness and serenity. For example, self-assurance emerged as a notable positive predictor of HPS Social Vitality in the regressions ($\beta = .49$), even though attentiveness and serenity actually showed weak negative associations with this variable (β s = $-.11$ and $-.03$, respectively). Furthermore, self-assurance also related moderately positively to IDAS-II Euphoria ($\beta = .35$), despite attentiveness and serenity again emerging as negative predictors of this variable (β s = $-.21$ and $-.13$, respectively). Similar patterns of associations were observed in the regressions for other self-report variables assessing manic symptoms, as self-assurance positively predicted scores on the HPS Excitement, HPS Mood Volatility, and IDAS-II Mania scales. Joviality also associated positively with HPS Excitement, HPS Mood Volatility, and IDAS-II Mania,

Table 2 Correlations between positive affectivity scales and self-rated psychopathology

Measure	Jov	Self-Assr	Attent	Seren	Negative Affect
<i>Mania</i>					
HPS Social Vitality	.34	.47	.26	.21	-.13
IDAS-II Euphoria	.24	.30	.10	.04	-.01
IDAS-II Mania	-.16	-.07	-.20	-.35	.48
HPS Mood Volatility	-.11	-.02	-.23	-.35	.48
HPS Excitement	.12	.16	-.05	-.22	.28
<i>Externalizing</i>					
NPI	.35	.48	.28	.22	-.14
PID-5 Attention Seeking	.08	.20	.03	-.04	.03
PID-5 Grandiosity	.10	.21	.03	.00	.04
PID-5 Risk Taking	.01	.18	-.01	-.07	.03
Disinhibition Composite	-.22	-.12	-.25	-.25	.37
Antagonism Composite	-.10	.07	-.15	-.10	.21
Drug Use Survey	-.20	-.15	-.17	-.16	.20
AUDIT	.03	.04	-.06	-.07	.09
<i>Internalizing</i>					
PID-5 Anhedonia	-.53	-.34	-.43	-.42	.53
IDAS-II Dysphoria	-.40	-.29	-.38	-.46	.62
GADQ-IV	-.31	-.21	-.25	-.45	.61
PHQ-9	-.37	-.24	-.34	-.35	.53
Panic Composite	-.31	-.21	-.33	-.35	.57
Social Anxiety Composite	-.27	-.27	-.30	-.31	.45
PTSD Composite	-.22	-.15	-.19	-.31	.54
<i>Psychoticism</i>					
PID-5 Suspiciousness	-.04	.07	-.06	-.16	.35
Positive Schizotypy Composite	-.20	-.07	-.21	-.27	.34
PID-5 Withdrawal	-.23	-.11	-.18	-.23	.33
PID-5 Restricted Affectivity	-.14	.00	-.12	-.07	.17

$N = 245$. Correlations $\geq .130$ are in bold, and all correlations $\geq .131$ are significant at $p < .05$. *PHQ-9* Patient Health Questionnaire-9, *IDAS-II* Expanded Version of the Inventory of Depression and Anxiety Symptoms, *HPS* Hypomanic Personality Scale, *PID-5* Personality Inventory for *DSM-5*, *AUDIT* Alcohol Use Disorders Identification Test, *GADQ-IV* Generalized Anxiety Disorder Questionnaire-IV, *NPI* Narcissistic Personality Inventory, *Jov* Joviality, *Self-Assr* Self-assurance, *Attent* Attentiveness, *Seren* Serenity

whereas attentiveness and serenity were negatively related to all three. However, the facets showed less specificity in their associations with manic episodes assessed via the clinical interview, as all four variables were weak predictors of this criterion in the logistic regressions.

Externalizing

An intriguing pattern of relations also emerged in the associations between positive affectivity and externalizing symptoms (e.g., risk taking, grandiosity, attention seeking). Self-assurance showed an interesting pattern of moderate positive relations to externalizing in the regressions (β s ranged from $-.02$ to $.49$; mean $\beta = .27$); this pattern of relations emerged despite the other three facets showing weak, negative relations with these variables. Self-

assurance most strongly predicted scores on the NPI and PID-5 Risk Taking (β s = $.49$ and $.42$, respectively) in the regressions, but related very weakly to alcohol and drug use (β s = $-.02$ and $.10$, respectively). Self-assurance—and the other three facets—displayed relatively weak associations with alcohol and substance use disorder in the logistic regressions.

Internalizing

Although the four positive affectivity facets correlated most strongly with internalizing psychopathology (e.g., IDAS-II Dysphoria, the GADQ-IV) at the bivariate level, they displayed considerably less predictive power in the regressions when the variance explained by negative affectivity was taken into account. However, even when

Table 3 Polyserial correlations between positive affectivity scales and interview ratings

Measure	Jov	Self-Assr	Attent	Seren	Negative Affect
<i>Mania</i>					
Mania	-.23	-.13	-.13	-.33	.48
<i>Externalizing</i>					
Substance Use Disorder	.01	.13	.09	-.02	.23
Alcohol Use Disorder	.06	.13	-.02	-.05	.09
<i>Internalizing</i>					
Social Anxiety Disorder	-.45	-.37	-.45	-.53	.60
Major Depressive Disorder	-.37	-.30	-.32	-.42	.47
Dysthymic Disorder	-.32	-.29	-.31	-.42	.48
GAD	-.30	-.22	-.29	-.54	.50
Panic Disorder	-.31	-.32	-.22	-.39	.38
PTSD	-.24	-.10	-.09	-.30	.44
<i>Psychoticism</i>					
Psychotic Disorder	-.12	-.12	-.10	-.18	.31

$N = 250\text{--}255$. Correlations $\geq |.30|$ are in bold, and all correlations $\geq |.22|$ are significant at $p < .05$. *Jov* Joviality, *Self-Assr* Self-assurance, *Attent* Attentiveness, *Seren* Serenity

taking negative affectivity into account, Joviality still emerged as a moderate predictor of PID-5 Anhedonia ($\beta = -.39$). Additionally, serenity also was a strong negative predictor of GAD assessed in the clinical interview ($OR = .45$), even after controlling for negative affectivity.

Psychoticism

As in the correlational analyses, the positive affectivity facets displayed weak relations with self-report psychoticism measures, although self-assurance positively predicted scores on all four psychoticism symptom dimensions (β s ranged from .11 to .23). Similarly, all four facets were weak predictors of psychotic disorder in the logistic regressions.³

Discussion

The data presented in Tables 2, 3, 4 and 5 indicate that the positive affectivity facets demonstrated striking specificity both within and across facets in their relations with a range of symptoms and diagnoses. The positive affectivity facets also displayed incremental predictive power when controlling for negative affectivity in many instances, underscoring the value of examining positive affect's relations with psychopathology. This was most apparent in their

relations with manic and externalizing symptoms, as the positive affectivity facets demonstrated distinctive patterns of relations with indicators of each type of psychopathology.

These data indicate that for mania and externalizing especially, it is important to consider how *specific types* of positive affectivity relate to these symptoms, as some show positive associations (i.e., self-assurance with mania and externalizing; Joviality with mania), whereas others show negative relations (i.e., serenity and attentiveness with both mania and externalizing). As is clear from our regression analyses, self-assurance showed distinctive positive relations with externalizing; in contrast, the other three positive affectivity facets negatively predicted externalizing symptoms in 19 of 24 instances (79 %). Therefore, although it correlated positively with the other three facets, the self-assurance dimension—which is characterized by feeling fearless, bold, and confident—appears to tap a somewhat maladaptive variant of positive affectivity that is associated with an increased likelihood of mania, narcissism, and other externalizing psychopathology, as hypothesized. Next, we provide more detailed summaries of the psychopathology relations for each positive affectivity facet scale.

Joviality

Joviality showed relatively little predictive power in the regressions for internalizing, even though we expected Joviality—which includes content related to happiness, and energy—to show robust associations with indicators of depression. That being said, this facet emerged as a moderate predictor of PID-5 Anhedonia ($\beta = -.39$),

³ We conducted additional analyses to examine whether the results differed substantially as a function of gender and clinical status (i.e., participants who indicated current or past therapy and/or current medication for psychological issues), but we found no systematic differences as a function of these variables. Thus, we focus here on presenting and discussing results from our overall sample.

Table 4 Standardized β weights from multiple regression analyses

Measure	Jov	Self-Assr	Attent	Seren	Negative Affect
<i>Mania</i>					
HPS Social Vitality	.08	.49*	-.11	-.03	-.02
HPS Excitement	.38*	.25*	-.21*	-.31*	.26*
IDAS-II Euphoria	.22*	.35*	-.21*	-.13	.03
IDAS-II Mania	.11	.14	-.10	-.19	.42*
HPS Mood Volatility	.20*	.21*	-.24*	-.21*	.41*
<i>Externalizing</i>					
NPI	.07	.49*	-.08	-.02	-.02
PID-5 Risk Taking	-.11	.42*	-.15	-.14	-.04
PID-5 Attention Seeking	-.00	.36*	-.14	-.14	-.00
Antagonism Composite	-.14	.36*	-.25*	.05	.19*
PID-5 Grandiosity	.04	.33*	-.15	-.07	.05
Disinhibition Composite	-.05	.12	-.17	-.02	.31*
Drug Use Survey	-.11	-.02	-.03	.02	.15
AUDIT	.15	.10	-.15	-.09	.07
<i>Internalizing</i>					
PID-5 Anhedonia	-.39*	.09	-.09	.03	.37*
PHQ-9	-.17*	.07	-.11	.04	.46*
GADQ-IV	-.03	-.00	.06	-.17*	.53*
Panic Composite	-.05	.05	-.15	.03	.52*
IDAS-II Dysphoria	-.08	.01	-.10	-.08	.51*
Social Anxiety Composite	.06	-.13	-.11	.00	.40*
PTSD Composite	.00	-.01	.02	-.01	.54*
<i>Psychoticism</i>					
PID-5 Suspiciousness	.04	.21*	-.07	-.04	.38*
PID-5 Restricted Affectivity	-.22*	.23*	-.12	.11	.16
Positive Schizotypy Composite	-.06	.20*	-.14	-.11	.25*
PID-5 Withdrawal	-.17	.11	-.02	-.01	.28*

$N = 245$. Significant effects ($p < .05$) are starred; values ≥ 1.301 are in bold. PHQ-9 Patient Health Questionnaire-9, IDAS-II Expanded Version of the Inventory of Depression and Anxiety Symptoms, HPS Hypomanic Personality Scale, PID-5 Personality Inventory for DSM-5, AUDIT Alcohol Use Disorders Identification Test, GADQ-IV Generalized Anxiety Disorder Questionnaire-IV, NPI Narcissistic Personality Inventory, Jov Joviality, Self-Assr Self-Assurance, Attent Attentiveness, Seren Serenity

suggesting that the positive affective content tapped by this scale still shows predictive power beyond other positive affective facets and negative affectivity in predicting a loss of interest and in the capacity to feel pleasure. Joviality also related moderately positively to HPS Excitement ($\beta = .38$) and showed positive, but weak, relations with other manic symptom indicators.

Self-Assurance

Our predictions for self-assurance largely were supported, as this scale was a moderate to strong positive predictor of externalizing psychopathology (especially narcissism) and mania. Self-assurance also emerged as a positive predictor of self-reported psychoticism in the regressions, although these relations were weak in magnitude. Given Self-

assurance's consistent positive relations with various forms of externalizing psychopathology (such as disinhibition, antagonism, and narcissism) and mania, it seems to represent a somewhat maladaptive variant of positive affectivity.

Mania and narcissism are theoretically connected through the dominance behavioral system, a biologically based system guiding dominant behavior and responses to perceptions of power (Johnson et al. 2012). Johnson et al. (2012) discuss how narcissism and mania both are characterized by strong drives for power and recognition, which our data indicate are tied to individual differences in self-assurance (e.g., feeling fearless, bold, and confident). Relatedly, the content contained in self-assurance is strongly related to reward seeking (Watson 2000a; Stanton and Watson 2015) and, therefore, may also be related to

Table 5 Odds ratios from logistic regression analyses

Measure	Jov	Self-Assr	Attent	Seren	Negative affect
<i>Mania</i>					
Mania	.85	.90	1.45	.97	3.05
<i>Externalizing</i>					
Substance Use Disorder	.82	1.42	1.27	1.22	1.88
Alcohol Use Disorder	1.13	1.57	.76	.87	1.16
<i>Internalizing</i>					
Social Anxiety Disorder	.64	.96	.73	.73	2.90
Dysthymic Disorder	1.05	.78	.90	.79	2.52
PTSD	.67	1.08	1.55	.82	2.29
Major Depressive Disorder	.81	.89	.90	.83	2.05
GAD	1.12	1.02	.96	.45	1.96
Panic Disorder	.91	.58	1.40	.72	1.76
<i>Psychoticism</i>					
Psychotic Disorder	1.18	.75	1.15	1.15	2.30

N = 250–255. Significant effects ($p < .05$) are in bold. *Jov* Joviality, *Self-Assr* Self-assurance, *Attent* Attentiveness, *Seren* Serenity

activation of the sympathetic nervous system, which is implicated in motivation and reward seeking behavior (Shiota et al. 2011). From an evolutionary perspective, individual differences in self-assurance are related to the motivation to acquire resources necessary for survival (Depue and Morrone-Strupinsky 2005), and—consistent with previous research (e.g., Gruber 2011)—our findings indicate that self-assurance demonstrated specificity with mania and with other disorders characterized by dominance and excessive reward seeking.

Attentiveness

Attentiveness displayed the least specificity and predictive power in its relations with psychopathology. We correctly predicted that the majority of the relations for attentiveness would be negative in direction, but this facet largely failed to demonstrate specificity among symptoms, as it related weakly to most forms of psychopathology. Although it showed moderately strong correlations with internalizing symptoms and diagnoses, the majority of these relations were noticeably weaker in the regression analyses.

Serenity

Serenity displayed broad moderate negative correlations with both self-report and interview measures of internalizing; however, most of these associations were much weaker in the regressions, which accounted for its overlap with negative affectivity. That being said, serenity demonstrated predictive power in several instances in the regressions. For example, it emerged as a notable predictor of our interview measure of GAD, which makes sense

theoretically, as one would not expect individuals who are feeling peaceful to also report pervasive anxiety. Furthermore, serenity was a moderate negative predictor of HPS Excitement scores ($\beta = -.31$). Our data suggest that it is important to assess specific serenity-related content (e.g., feelings of peacefulness) in future anxiety disorder and bipolar disorder research, and are consistent with other findings indicating that it is important for affective measures to include low arousal positive affect content (Tsai et al. 2006). Lastly, these findings are consistent with previous research indicating that calm and serene emotional states—which may be indicative of consummatory and affiliative needs having been met (Depue and Morrone-Strupinsky 2005)—show distinctive patterns of relations with psychopathology from higher arousal variants of positive affect (Gilbert et al. 2009).

Study Limitations

This study contributes to the affect-psychopathology literature in several important ways (i.e., we explicated the relations for facets of positive affect with a broad range of psychopathology assessed using both self-report and interview measures in a diverse sample), but it has several important limitations worth noting. Although we incorporated both self-report and interview measures, we did not have interview measures of personality pathology (e.g., narcissism, antisocial behaviors and attitudes). Moreover, our battery did not include several important types of psychopathology (e.g., neurodevelopmental disorders).

Several other limitations also need to be acknowledged. First, our study included only self-report measures of positive affectivity. Obtaining informant and interview-

based measures of trait affectivity would prove useful in future research. Related to this point, our assessment of positive affectivity did not tap affiliative variants of positive affect (e.g., feelings of warmth and safety), which are important to assess given that affiliative positive affect displays distinctive patterns of associations from other positive affective facets (Gilbert et al. 2008; Kelly et al. 2012). Next, longitudinal research designs are needed to clarify the nature of the relations between positive affectivity and psychopathology. In this regard, although self-report measures of affect show comparatively poorer temporal stability than measures of personality, evidence indicates that trait affect demonstrates moderate long-term stability and significant predictive power in relation to measures of psychopathology (Watson and Walker 1996). Lastly, although our data provide strong evidence for specificity in the relations between positive affectivity facets and psychopathology, causality cannot be inferred from these relations. Thus, these data provided a starting point for future research that clarifies the nature of the mechanisms underlying these associations.

Conclusion

Our data provide strong evidence for the specificity of positive affectivity facets in their relations with internalizing, externalizing, mania, and psychotic symptoms and diagnoses. Furthermore, these data underscore the importance of studying both positive affective and negative affective dysfunction in psychopathology, especially in regards to positive affect's relations with externalizing and mania. Our findings indicate that self-assurance, in particular, shows a distinctive pattern of associations that differs from those of other facets, as it related positively with both mania and externalizing. These findings demonstrate the value in explicating positive affectivity–psychopathology relations at the facet level, as many of these more specific and nuanced relations are not apparent at the general domain level. We hope that further research will build upon this work to clarify the nature of specific types of positive affective dysfunction across psychological symptoms and disorders.

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Compliance with Ethical Standards

Conflict of Interest Kasey Stanton, Sara M. Stasik-O'Brien, Stephanie Ellickson-Larew, David Watson declare that they have no conflict of interest (financial or non-financial).

Informed Consent All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

Animal Rights No animal studies were carried out by the authors for this article.

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