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The neglected relationship between social interaction anxiety and hedonic deficits: differentiation from depressive symptoms

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Abstract

Depressive symptoms are associated with both the presence of negative subjective experiences and relative absence of positive subjective experiences. A similar affective profile of high negative affect and low positive affect (PA) has been associated with excessive social anxiety (SA). This initial cross-sectional study evaluated the incremental effects of social interaction anxiety on hedonic deficits beyond the effects of depressive and anxiety (i.e., physiological arousal, worry) symptoms. From a sample of 97 college students, a factor analysis on self-report measures of hedonic functioning derived two domains: Positive Subjective Experiences and Curiosity. Social interaction anxiety was uniquely, negatively related to Positive Subjective Experiences and Curiosity after removing variance attributable to various depressive and anxiety symptoms. In contrast, anxious arousal and nonspecific anxiety had near-zero relationships with both domains, and depressive symptoms were negatively related to Positive Subjective Experiences. These data provide some evidence for an association between social interaction anxiety and hedonic deficits that is not attributable to covariance with other internalizing conditions.

Keywords: Social anxiety; Depression; Positive affect; Curiosity

Individuals with excessive social anxiety (SA) have a marked and persistent fear of being negatively evaluated and rejected (American Psychiatric Association, 1994). Decades of research has explicated the significant distress and

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impairment associated with excessive social anxiety. For example, these individuals report greater negative affect and feelings of loneliness, poorer educational, occupational, and interpersonal functioning, and greater suicidal ideations than their less socially anxious or non-disordered counterparts (e.g., Davidson, Hughes, George, & Blazer, 1994; Safren, Heimberg, Brown, & Holle, 1997; Schneier et al., 1994; Wittchen, Fuetsch, Sonntag, Mueller, & Liebowitz, 2000). More recently, research has begun to show that excessive socially anxious individuals not only exhibit high levels of negative experiences but also report deficits in positive subjective experiences.

Although researchers tend to define positive and negative subjective experiences as a bipolar dimension, evidence suggests that these domains are only moderately correlated and may be evaluated separately (Bradburn, 1969; Cacioppo & Berntson, 1994; Watson, 2000). In terms of psychopathological conditions, depression is associated with a high level of negative subjective experiences and a low level of positive subjective experiences (e.g., American Psychiatric Association, 1994; Henriques & Davidson, 2000). It has been postulated that despite shared symptoms of general distress and high comorbidity rates between depression and anxiety, low positive affect (PA) is specific to depression (Clark & Watson, 1991; Watson et al., 1995). Nonetheless, evidence supporting the specificity of low positive affect to depression has been mixed. Data have been accumulating that social anxiety has an affective profile similar to depression; high negative affect and low positive affect (Brown, Chorpita, & Barlow, 1998; Chorpita, Plummer, & Moffitt, 2000; Watson, Clark, & Carey, 1988). Other anxiety disorders have consistently shown no relationship with positive affect.

Theorists posit that one of the fundamental needs of human beings is a sense of social inclusion (Baumeister & Leary, 1995; Ryan & Deci, 2000) and the salutary effects of social activity on subjective well-being and quality-of-life are well-established (e.g., Clark & Watson, 1988; Csikszentmihalyi, 1990; Watson, Clark, McIntyre, & Hamaker, 1992). Similarly, daily positive affect has been shown to covary with feelings of relatedness to others (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000). Thus, it makes intuitive sense to explore the relationship between excessive social anxiety and deficits in hedonic functioning. By definition, individuals with excessive social anxiety experience extreme discomfort in social situations and have a tendency to be disengaged or avoid them altogether. The psychosocial benefits of social activity are inhibited by excessive social anxiety.

Social anxiety has been proposed to be composed of two interrelated dimensions (Mattick & Clarke, 1998). Social interaction anxiety is defined as the fear and avoidance of meeting, interacting, and expressing oneself with others. Social observation anxiety is defined as the fear and avoidance of social situations where one is performing or being observed. Upon controlling for the common variance of these two social anxiety dimensions, only social interaction anxiety was found to be negatively associated with various indices of hedonic

functioning (Kashdan, 2002). This makes sense as social interaction fears and avoidance behaviors can be expected to interfere with the initiation of positive social encounters and the development of close relationships, which serve as sources of intimacy, laughter, social support, and other reinforcing outcomes. Social interaction anxiety was associated with lower subjective well-being, positive affect, vitality, optimism, hope, reward sensitivity, and curiosity even after controlling for the higher-order factor of trait anxiety (Kashdan, 2002). Only social interaction anxiety was related to curiosity. Curiosity has been defined as the recognition, pursuit, and self-regulation of novel and challenging opportunities (Kashdan, Rose, & Fincham, 2002). Because curiosity has been posited to facilitate learning, perseverance, and personal growth opportunities, inhibitors of curiosity may have adverse consequences in various domains (e.g., building new interpersonal relationships).

The aforementioned findings were interesting but failed to address the covariance between social interaction anxiety and depression. High socially anxious individuals tend to exhibit greater depressive symptoms than low socially anxious individuals. Anhedonia or deficits in hedonic functioning are a defining feature of depression. It could be argued that the relationship between social interaction anxiety and hedonic functioning may be an artifact of shared features with depressive symptoms. Alternatively, if social interaction anxiety is associated with hedonic deficits above and beyond depressive symptoms, questions may be raised as to whether anhedonia is specific to depression.

This study sought to replicate and extend prior work on the relationship between social interaction anxiety and hedonic deficits. The current study examined whether social interaction anxiety findings were subsumed by the more established, robust work on depressive symptoms and hedonic deficits. Additionally, the present study examined whether other anxiety symptoms such as physiological hyperarousal and worry had associations with hedonic deficits. To test the uniqueness of relationships between social interaction anxiety and hedonic functioning, the variance attributable to global dimensions of depression and anxiety were statistically controlled simultaneously. It was hypothesized that upon controlling for shared variance, only depression and social anxiety would be negatively related to indices of hedonic functioning.

1. Method

1.1. Participants

Participants were 100 undergraduate students from a large, Northeastern University. There were 73 females (73%) and 25 males (25%), and 2 who failed to report their gender. There were 74 (74%) European-Americans, 6 (6%) Asian-Americans, 6 (6%) African-Americans, 4 (4%) Hispanic-Americans, and 10 who wrote in their own categories (e.g., Arab, Guyanese). The mean age was 24.28

(S.D. = 7.16). Participants were part of two separate classes. Using listwise deletion procedures, 97 students were used in analyses (72 females; 25 males; 2 unknown).

1.2. Procedure

Participants received course credit for completing a questionnaire battery. Both classes were night-classes that are typically comprised of older students in undergraduate psychology classes.

1.3. Measures

1.3.1. Social Interaction Anxiety Scale (SIAS)

The 19-item SIAS (Mattick & Clarke, 1998) assessed general fears and avoidance behaviors concerning social interactions (e.g., distress while initiating and maintaining conversations, anticipatory anxiety of interpersonal situations). Respondents used a four-point Likert-type scale.

1.3.2. Mood and Anxiety Symptom Questionnaire (MASQ)

The 90-item MASQ (Watson & Clark, 1991) was designed to assess the three higher-order factors, physiological hyperarousal, negative affectivity, and positive affectivity, that have been proposed to explain the symptom profiles of anxiety and mood disorders (e.g., Watson et al., 1995). The five subscales of the MASQ include: (1) 15-item General Distress: nonspecific symptoms common to both anxiety and mood disorders (e.g., worried a lot about things, felt dissatisfied about things), (2) 11-item Nonspecific Anxiety: tapping nondifferentiating anxiety symptoms (e.g., inability to relax, felt afraid), (3) 12-item Nonspecific Depression: tapping nondifferentiating depression symptoms (e.g., felt discouraged, blamed myself for things), (4) 17-item Anxious Arousal: tapping physiological symptoms of anxiety or panic (e.g., shaky hands, short of breath), and (5) 22-item Anhedonic Depression [14 positive affect and cognition items were reverse-scored]: tapping feelings of low positive affect and pleasure in daily activities [e.g., was proud of myself, felt optimistic, felt cheerful]. Respondents used a five-point Likert-type scale.

1.3.3. Subjective Vitality Scale (SVS)

The 7-item SVS (SVS; Ryan & Fredrick, 1997) measures general feelings of positive energy and liveliness. Respondents used a seven-point Likert-type scale.

1.3.4. Satisfaction with Life Scale (SWLS)

The five-item Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Grifin, 1985) assessed general self-appraisals of life satisfaction. Respondents used a seven-point Likert scale.

1.3.5. Curiosity measures

Two measures were used to assess curiosity. The 10-item State-Trait Curiosity Inventory-Trait (STCI; Spielberger, 1979) assessed general feelings of interest and wonder. Respondents used a four-point Likert-type scale. The seven-item Curiosity and Exploration Inventory (CEI; Kashdan et al., 2002) assessed two components of the curiosity construct: (1) Exploration—general appetitive tendencies for novelty and challenge, and (2) Absorption—the propensity to be deeply absorbed in activities such that time becomes distorted and distractions are easily ignored. Respondents used a seven-point Likert scale.

2. Results

2.1. Preliminary analyses

The means and standard deviations for all self-report scales are reported in Table 1. The average score of participants on the SIAS ($M = 28.39$; S.D. $= 14.43$) was similar to other nonclinical samples reported in the literature.

As mentioned in the Section 1, we used a sample of mature-aged college students ($M = 24.33$; S.D. $= 7.25$). Age had a significant relationship with the SIAS ($r = -.21, P < .05$), MASQ-General Distress ($r = -.21, P < .05$), MASQ-Nonspecific Anxiety ($r = -.20$, $P < .05$), and MASQ-Anxious Arousal ($r = -.23, P < .05$). Thus, age was included as a covariate in subsequent analyses. The SIAS had small to moderate positive correlations with the MASQ-General Distress ($r = .37$, $P < .001$), MASQ-Nonspecific Anxiety ($r = .21$, $P < .05$), MASQ-Nonspecific Depression ($r = -.33$, $P < .001$), and MASQ-Anxious Arousal ($r = .21$, $P < .05$) scales. These significant relationships justify the hierarchical regression analyses conducted to examine the potentially distinct

Table 1
Means and standard deviations for individual difference variables

Variable	*M*	S.D.
Social Interaction Anxiety Scale	28.39	14.43
MASQ-General Distress	35.48	10.30
MASQ-Nonspecific Anxiety	22.54	7.21
MASQ-Nonspecific Depression	25.92	9.54
MASQ-Anxious Arousal	26.32	8.32
MASQ-Anhedonia[a]	57.36	13.88
Subjective Vitality Scale	30.90	7.71
Satisfaction with Life Scale	22.27	5.88
State-Trait Curiosity Inventory	29.02	5.09
Curiosity and Exploration Inventory-Exploration	19.90	4.17
Curiosity and Exploration Inventory-Absorption	13.34	3.67

Note. $N = 95$.

[a] 14 of the 22 items reflecting positive affect were reverse-scored.

relationships between social interaction anxiety and each dimension of anxiety and depression with indices of hedonic functioning.

The SIAS had small to moderate negative correlations with the MASQ-Anhedonia ($r = -.36$, $P < .001$), Subjective Vitality Scale ($r = -.39$, $P < .001$), Satisfaction with Life Scale ($r = -.23$, $P < .05$), State-Trait Curiosity Inventory-Trait ($r = -.32$, $P < .001$), and the Curiosity and Exploration Inventory-Exploration subscale ($r = -.42$, $P < .001$); there was no relationship with the Curiosity and Exploration Inventory-Absorption subscale ($P > .85$). A principal components analysis with an oblique (promax) rotation was conducted on the six measures of hedonic functioning. This rotation was conducted due to expectations of interrelatedness among hedonic functioning constructs. Results produced two factors with eigenvalues exceeding 1.0 (the fourth factor had an eigenvalue of 0.58). After rotation, the first factor had an eigenvalue of 2.90 and the second factor had an eigenvalue of 1.43. In total, the two factors accounted for 72.17% of the sample variance. Observations of the scree plot supported a clear break after two factors. Table 2 shows the factor loadings of the two-factor solution (using the structure matrix).

The first factor was composed of measures assessing low positive affect (or anhedonia), subjective vitality, and satisfaction with life. The second factor was composed of three curiosity scales and subscales. Considering that curiosity entails active engagement with the environment, it was not surprising that subjective vitality loaded on this factor at a moderate level. It should be noted that the extremely face-valid State-Trait Curiosity Inventory, with items that fail to discriminate between positive affect and curiosity (Kashdan, in press), had high loadings on both the first and second factors. In contrast, the Curiosity and Exploration Inventory subscales, derived to capture the components of curiosity, exhibited greater specificity from other hedonic functioning constructs. Since these two broad domains were virtually identical to those found in a previous study (Kashdan, 2002), the factors were similarly labeled Positive Subjective

Table 2
Promax-rotated factor loadings for indices of hedonic functioning

Variable	Factor 1 (Positive Subjective Experiences)	Factor 2 (Curiosity)
Subjective Vitality Scale	**0.85**	0.53
Satisfaction with Life Scale	**0.76**	0.01
MASQ-Anhedonia	**−0.87**	−0.25
State-Trait Curiosity Inventory	0.66	**0.70**
CEI-Exploration	0.34	**0.87**
CEI-Absorption	0.05	**0.80**
Variance explained	48.81	23.96

Note. $N = 97$. The bold print refers to the factor that each variable loads on the highest. MASQ: Mood and Anxiety Symptom Questionnaire (Watson & Clark, 1991); CEI: Curiosity and Exploration Inventory (Kashdan, Rose, & Fincham, 2002).

Experiences and Curiosity, respectively. Different metrics were used for many of the scales in the factor analysis and factor scores tend to be unstable across samples (e.g., Russell, 2002). Thus, all scales and subscales were transformed into z-scores. Aggregating appropriate scales and subscales derived composite scores for Positive Subjective Experiences and Curiosity. These composite scores had a moderate positive correlation ($r = .39$, $P < .001$).

2.2. Relationship between social interaction anxiety and hedonic factors controlling for various dimensions of anxiety and depression

To test the unique contribution of social interaction anxiety to Positive Subjective Experiences and Curiosity after controlling for each of the Mood and Anxiety Symptom Questionnaire subscales, a series of hierarchical regressions were conducted. For each regression, at step 1, age was entered as a covariate. At step 2, General Distress, Nonspecific Anxiety, Nonspecific Depression, and MASQ-Anxious Arousal were entered as main effects, and at step 3, social interaction anxiety was entered as a main effect. This order of entry allowed for a primary examination of whether relationships between social interaction anxiety and hedonic functioning existed beyond the variance explained by other dimensions of anxiety and depression, and if so, the incremental variance attributable to social interaction anxiety (see Table 3).

Table 3
Contributions of social interaction anxiety, anxiety, and depressive symptoms to broad factors of hedonic functioning: multiple regression analyses

	Positive Subjective Experiences				Curiosity			
	Beta	r	Pr	$R^2\Delta$	Beta	r	Pr	$R^2\Delta$
Step 1: Covariate				.00				.05*
Age	.06	.06	.06		.22*	.22	.22*	
Step 2: Negative affectivity				.57***				.05
MASQ-General Distress	−.20	−.63***	−.15		.18	−.10	.09	
MASQ-Nonspecific Anxiety	.02	−.43***	.02		.06	−.06	.04	
MASQ-Nonspecific Depression	−.71***	−.74***	−.53***		−.39*	−.20	−.23*	
MASQ-Anxious Arousal	.20	−.32***	.20		.07	−.05	.05	
Step 3: Social Anxiety				.02*				.07**
Social Interaction Anxiety	−.16*	−.39***	−.22*		−.28**	−.32**	−.27**	
Total R^2				60***				.17**
Total adjusted R^2				.57***				.11**

Note. $N = 97$.
* $P < .05$.
** $P < .01$.
*** $P < .001$.

As Table 3 shows, social interaction anxiety made a statistically significant contribution to explaining Positive Subjective Experiences, $F\Delta(1, 88) = 4.62$, $Pr = -.22$, $P < .05$, beyond the variance explained by dimensions of anxiety and depression. The only other construct with a significant negative relationship to Positive Subjective Experiences was Nonspecific Depression symptoms, $t(89) = -5.89$, $Pr = -.53$, $P < .001$.

As Table 3 shows, social interaction anxiety made a statistically significant contribution to explaining Curiosity, $F\Delta(1, 88) = 7.06$, $Pr = -.27$, $P < .01$, beyond the variance explained by dimensions of anxiety and depression. The omnibus test for the other dimensions of anxiety and depression failed to reach significance ($P > .05$). Thus, the only unique, negative predictor of Curiosity was social interaction anxiety.

Overall, the results showed social interaction anxiety to be uniquely, negatively related to both Positive Subjective Experiences and Curiosity, even after controlling for all other symptoms related to anxiety and depression. Interestingly, General Distress (i.e., neuroticism), Nonspecific Anxiety, and Anxious Arousal symptoms had no relationship to either Positive Subjective Experiences or Curiosity after controlling for social interaction anxiety and depressive symptoms. As can be seen in Table 3, the overall models for Positive Subjective Experiences and Curiosity explained 60 and 17% of the variance, respectively.

3. Discussion

Results from the current study provide support for the unique relationship between social interaction anxiety and various indices of positive subjective experience and curiosity. Although theoretical models tend to focus on the specificity of positive affect to depression and not anxiety (Burns & Eidelson, 1998; Clark & Watson, 1991), individuals with excessive social interaction anxiety appear to have hedonic deficits that are similar to individuals with excessive depressive symptomatology. Furthermore, only social interaction anxiety appears to be uniquely, negatively related to curiosity. Other forms of anxiety such as general distress, panic, and worry symptoms had no relationship with hedonic functioning.

Consistent with prior findings (Brown et al., 1998; Kashdan, 2002), social interaction anxiety appears to be linked with the presence of negative subjective experiences and the relative absence of positive subjective experiences. Despite study limitations, one can speculate that the growth of research on hedonic deficits associated with social interaction anxiety has potential taxonomic and treatment implications. Anhedonia, the significant loss of interest or pleasure in activities, is included in the Diagnostic and Statistical Manual of Mental Disorders as a symptom unique to depression (APA, 1994). Anhedonia and similar hedonic deficits do not appear to be specific to depression and may be part of the symptom profile of extreme social interaction anxiety or Social Anxiety Disorder.

Anhedonia may aid in the complex differentiation between normal, subclinical, and clinical thresholds for Social Anxiety Disorder. Furthermore, the presence of anhedonic symptoms may be an important moderator of individuals being treated for excessive social anxiety. Specifically, individuals with excessive social anxiety and anhedonia may exhibit particularly poor responses to current efficacious interventions (e.g. Hope, Heimberg, Juster, & Turk, 2000). The present data suggest that depression-based treatment modules that focus on increasing pleasant activities (Lewinsohn, Antonuccio, Steinmetz, & Teri, 1984) and deep awareness and engagement in everything going on within and without (i.e., mindfulness; Segal, Williams, & Teasdale, 2002) may serve as beneficial adjuncts to efficacious exposure-based treatments for Social Anxiety Disorder. Promising work in these areas has yet to be applied to the study and treatment of social anxiety.

In understanding the structure of hedonic functioning, the current principal components analysis replicated the two broad domains, Positive Subjective Experiences and Curiosity, found in prior work (Kashdan, 2002). An interesting question emerged as to why social interaction anxiety, and not other dimensions of anxiety and depression, was uniquely negatively related to curiosity. The state of curiosity involves a high allocation of energy and resources to explore the environment and self for rewarding stimuli. The potential outcome of curiosity is the building of personal and interpersonal resources (Fredrickson, 1998). The excessive negatively-valenced self-focused attention inherent to social anxiety in perceived social-evaluative situations (Clark & Wells, 1995) may impede the allocation of personal resources to positively-valenced information. There is some experimental work showing that excessive social anxiety interferes with exploring challenging puzzles (Plant & Ryan, 1985), asking and responding to questions in the classroom environment (Peters, 1978), and the intimacy behaviors that lead to feelings of closeness between novel social interaction partners (Kashdan & Roberts, in press-a, in press-b). With the advent of rich theoretical frameworks on social anxiety (e.g., Leary & Kowalski, 1995; Rapee & Heimberg, 1997; Wells, 1997) and curiosity (Kashdan et al., 2002; Spielberger & Starr, 1994), further work is needed on the temporal relationship and potential mediating mechanisms between social anxiety and curiosity.

As a secondary finding, both physiological arousal and nonspecific anxiety (i.e., nondifferentiating anxiety symptoms) exhibited significant negative zero-order correlations with positive subjective experiences. However, it became apparent that these relationships were attributable to common variance shared with depressive symptoms. In order to avoid artificial relationships in future studies, examinations of relationships between positive subjective experiences and anxiety dimensions such as worry, panic, and obsessive-compulsive disorder symptoms should account for shared variance with depression and social anxiety.

Despite a number of significant findings, limitations of the present study need to be underscored. All findings should be considered preliminary due to the small sample size. Our sample was limited to a slightly older college sample. Thus, the

generalizability of our sample to the majority of college students and other populations is questionable. The current findings do add to a growing body of work with various samples showing a unique relationship between social interaction anxiety and hedonic deficits. An understanding of the clinical implications is best served by conducting replication studies using clinical samples. However, evidence suggests that the boundaries between subclinical and clinical social anxiety are fuzzy at best (Davidson et al., 1994; Rapee, 1995). Most importantly, the present investigation was restricted to self-report measures in a cross-sectional design. Causal inferences cannot be tested with the current data. However, some interesting hypotheses warrant testing. Studies have shown that behavioral inhibited individuals are more susceptible to developing Social Anxiety Disorder (e.g., Hayward, Killen, Kraemer, & Taylor, 1998). The existence of excessive social anxiety and social avoidance behaviors may limit rewarding opportunities, positive affective experiences and over time, blunt reward sensitivities.

Anhedonia or hedonic deficits have typically been used to differentiate depression from anxiety-related constructs. In tandem with prior work (Kashdan, 2002), these preliminary data demonstrate that the relationship between social interaction anxiety and hedonic deficits can be differentiated from the overlapping dimensions of neuroticism, trait anxiety, depression, anxious arousal, and worry. Social interaction anxiety and depression are separate, overlapping conditions and both appear to be uniquely associated with low positive affect, optimism, subjective well-being, and vitality. Only social interaction anxiety appears to be uniquely negatively related to curiosity and its beneficial consequences. These findings add incremental knowledge on the significant anhedonic symptoms associated with social interaction fears and avoidance behaviors.

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