

Review article

# Social anxiety spectrum and diminished positive experiences: Theoretical synthesis and meta-analysis

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Received 15 May 2006; received in revised form 21 November 2006; accepted 1 December 2006

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## Abstract

Until recently, there has been limited recognition that diminished positive psychological experiences are important to understanding the nature of social anxiety. Meta-analytic techniques were used to evaluate the strength, consistency, and construct specificity of relations between the social anxiety spectrum with positive affect and curiosity. The social anxiety spectrum had significant inverse relations with positive affect ( $r = -.36$ ; 95% CI:  $-.31$  to  $-.40$ ) and curiosity ( $r = -.24$ ; 95% CI:  $-.20$  to  $-.28$ ). Relations between social anxiety and positive affect were stronger in studies sampling from clinical populations. Specificity findings (e.g., statistically controlling for depressive symptoms and disorders) further confirmed negative associations with positive affect ( $r = -.21$ ; 95% CI:  $-.16$  to  $-.26$ ) and curiosity ( $r = -.21$ ; 95% CI:  $-.08$  to  $-.32$ ). The literature on social rank, self-presentation concerns, self-regulatory resources, and experiential avoidance is reviewed and integrated to elaborate a framework of how, why, and when social anxiety may be inversely related to positive experiences. The specificity of theory and data to social interaction anxiety is supported by an examination of existing work on social performance/observation fears and other anxiety conditions. Overall, these findings highlight the importance of diminished positive psychological experiences in understanding excessive social anxiety.

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*Keywords:* Social anxiety; Social phobia; Positive emotions; Curiosity; Experiential avoidance; Depression

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Social anxiety is defined as the fear and avoidance of social situations in which a person might be exposed to negative evaluation by others. The costs of excessive social anxiety can be considerable. This includes higher probabilities of being single or divorced or having no romantic relationships, a wide range of sexual dysfunctions and occupational impairments, smaller social networks and less social support, general reports of low quality of life, and a greater risk for suicidality and comorbid psychiatric diagnoses (e.g., [Bodinger et al., 2002](#); [Davidson, Hughes, George, & Blazer, 1994](#); [Schneier et al., 1994](#)). The vast majority of research suggests that social anxiety exists on a continuum ([McNeil, 2001](#))—from the absence of social fear, through ordinary shyness and mild social anxiety, to more intense, and functionally impairing social fears, including generalized social anxiety disorder (SAD). This continuum will be referred to as the social anxiety spectrum.

Over the past few decades, an extensive body of research has been devoted to defining and cataloguing the distress and impairment associated with and caused by excessive social anxiety. The primary focus on pathology has coincided with minimal consideration of how social anxiety relates to positive, healthy attributes. This article presents a theoretical review and meta-analysis of existing data examining relations between the social anxiety spectrum and positive psychological experiences.

## 1. Differentiating positive and negative psychological substrates

For decades, it has been proposed that the absence of psychopathology is not synonymous with psychological health ([World Health Organization, 1946](#)). Several converging lines of research support the existence of two relatively independent systems of human functioning. Instead of being endpoints on a single continuum, positive and negative affects form two negatively correlated but separate factors ([Bradburn, 1969](#); [Diener & Emmons, 1985](#)) with distinct correlates and processes. The differentiation between positive and negative affect has been supported by research on regions of neurological and physiological activity ([Davidson, 1992](#)), facial expressions ([Ekman, 1982](#)), cognitive style ([Cacioppo & Berntson, 1994](#)), decision-making ([Lerner & Keltner, 2000](#)), and goal orientation ([Higgins, 1998](#)).

Positive and negative experiences can be construed as outputs of separate, adaptive, biobehavioral systems ([Gray, 1987](#)). Positive experiences derive from the appetitive/approach system, which is sensitive to reward cues and motivates the organism to pursue pleasurable opportunities. Negative experiences derive from the aversive/avoidance system, which is sensitive to threat and danger and motivates the organism to withdraw from potentially painful stimuli. The first increases the likelihood of acquiring skills, knowledge, and resources that lead to personal growth and build social bonds. The second decreases the likelihood of loss and death, and making ill-informed behavioral strategies leading to social exclusion and the loss of access to social group resources.

A two-dimensional approach to positive and negative experiences suggests that excessive negative affect does not inevitably lead to diminished positive affect and appetitive processes. A study of the structure of mental health in a study with over 3000 community participants, found two negatively related, independent dimensions ([Keyes, 2005](#)).

Measures of the presence or absence of depression, generalized anxiety disorder, panic disorder, and alcohol dependence comprised one factor whereas measures of psychological and social well-being comprised a second factor. Certain psychiatric conditions such as depression and schizophrenia are explicitly defined by diminished positive affect (a single criterion reflecting anhedonia; [American Psychiatric Association, 2000](#)). However, a diagnosis of mental illness (by itself) fails to provide information on a persons' pattern of positive psychological experiences and events.

It would be erroneous to imply that negative affect is synonymous with disorder and positive affect with health. There is evidence that some degree of negativity is fundamental to healthy personal and social functioning. This includes work suggesting an optimal mean ratio of positive to negative emotions during (1) everyday life that differentiates people who are and are not flourishing ([Fredrickson & Losada, 2005](#)) and (2) marital conflict that differentiates people who are at low and high risk for divorce ([Gottman, 1994](#)). The experience and expression of negative affect can often be a direct route to intimacy development, successful problem-solving efforts, and persistence toward difficult goals. Other work suggests the presence of non-linear relations between affect and adaptive outcomes. For example, excessive, uncontrollable, or culturally unacceptable positive experiences are a feature of pathologies such as manic episodes, impulsive disorders, and paraphilias. As another example, in moderation, feelings of guilt can inhibit morally questionable behavior and promote prosocial behavior. A full discussion of these dynamic relations is beyond the scope of the current paper. Nonetheless, existing data provide evidence for the psychological and social benefits of frequent positive affect, curiosity, and exploratory tendencies ([Kashdan & Fincham, 2004](#); [Lyubomirsky, King, & Diener, 2005](#)).

In this article, a theoretical and empirical rationale is provided for excessive social anxiety as a factor that interferes with the experience of two dimensions of psychological health: positive affect and curiosity. A fundamental component in judgments of well-being is the frequency and intensity of pleasant emotions such as joy and gratitude. Positive affect makes life enjoyable and also serves to increase psychological flexibility, sustain coping and thriving efforts, build social bonds, and counter the adverse physiological and psychological effects of negative emotions ([Lazarus, 1993](#); [Fredrickson, 1998](#)). Construing positive emotions as evolutionarily adaptive, [Fredrickson \(1998\)](#) emphasizes their role in broadening and strengthening intrapersonal (cognitive, physical) and interpersonal resources. Data on the structure of well-being find that positive affect (a core marker of hedonic well-being or the presence of pleasure and life satisfaction) is positively related, but distinct from curiosity and other indices of psychological well-being ([Kashdan, 2002, 2004](#); [Keyes, Shmotkin, & Ryff, 2002](#)). As an illustration of the different functions of positive affect such as joy from curiosity, imagine a person ordering a meal at a restaurant. The person feeling joy is likely to order a dish they liked in the past whereas the person feeling curious is likely to try a new and unique dish. Curiosity is a pleasant, appetitive state wherein people recognize, seek out, and want to investigate new information and experiences. Curiosity motivates people to explore and persist in the activity that initially stimulated their interest ([Izard, 1977](#)). When people feel curious, they thrive on novel and challenging interactions with the world, with exploratory behavior inevitably leading to an expansion of knowledge, skills, and resources. The essence of living a satisfying and meaningful life is the ability to flexibly adapt to different contexts such that curiosity for rewarding and challenging activities is satisfied and anxiety for reasonably dangerous activities is heeded. For particularly (socially) anxious people, feelings of anxiety and escape tendencies are expected to be the default response to stimuli perceived as novel or challenging. Consequently, curiosity and exploration may be thwarted. Over time, an accumulation of unfulfilled desires and rewards is expected to have considerable psychological costs (e.g., stagnation in work, leisure, and cognitive abilities; social cocoon).

Recent advances suggest that (1) positive and negative affects are negatively related but independent, (2) there are instances when pleasure and displeasure are experienced simultaneously, (3) in the absence or minimal existence of threat, people tend to be interested and exploratory ([Cacioppo & Berntson, 1994](#)), and (4) certain negatively valenced conditions interfere with the experience of positive affect and psychological well-being. Despite these advances, studies with clinical samples have yet to examine the nature of mixed feelings or examine linear and non-linear relations with components of psychological well-being. Moreover, the relation of social anxiety to hedonic and psychological well-being has been particularly neglected relative to other clinical conditions (e.g., depression and schizophrenia). To address this gap, the theoretical and empirical relation of social anxiety with positive affect and curiosity was examined.

## **2. Theoretical rationale for studying social anxiety and positive experiences**

Why might social anxiety inhibit positive experiences? Elements of several theoretical models of social anxiety can be synthesized to provide a theoretical rationale ([Baumeister & Tice, 1990](#); [Clark & Wells, 1995](#); [Gilbert, 2001](#); [Leary, 2000](#)), with additional attention to a self-regulatory perspective of psychopathology ([Widiger & Trull, 1991](#)). Social

anxiety is arguably a component of the biologically based avoidance system, designed to alert and protect against possible social rejection. To be accepted, people need to impress upon others that they are a worthy social investment. People who are attractive (physically and psychologically), socially desirable (e.g., intelligent, interesting), competent, and responsive to conventional social group norms are considered a worthy investment of time, energy, and resources (Baumeister & Tice, 1990; Gilbert, 2001). These characteristics are evaluated by other people; thus, to some degree, a person's social worth is unstable and uncontrollable. Consequently, social anxiety can be triggered by concerns about making a favorable impression on others, beliefs that one will be unable to do so, and appraisals of social danger. People with greater social anxiety are extremely reactive to social threat cues (Gilboa-Schechtman, Foa, & Amir, 1999; Stein, Goldin, Sareen, Zorrilla, & Brown, 2002), report biased estimates of the probability and danger of various social events (Foa, Franklin, Perry, & Herbert, 1996), and consistently underestimate their social performance and overestimate the visibility of anxiety (e.g., Wallace & Alden, 1997). These information-processing biases appear to exacerbate anxiety, self-presentation concerns, and the use of avoidance coping strategies (Clark & Wells, 1995). Studies have also shown that a subset of socially anxious people externalize their anger, engage in aggressive and selfish behaviors, and are boastful and egotistical as a means to gain approval or prevent rejection (Erwin, Heimberg, Schneier, & Liebowitz, 2003; Kachin, Newman, & Pincus, 2001; Vohs, Baumeister, & Ciarocco, 2005). These seemingly paradoxical, uninhibited behaviors are proposed to differ in content from over-regulated avoidance behaviors but the functional goal is the same: to avoid the experience of anxiety or the likelihood of rejection.

Anxiety and social activity are ubiquitous and in lieu of a hermit-like existence, are virtually unavoidable in everyday life. Theoretically, it would be emotionally and physically draining to be hyper-focused on the control, fear, and avoidance of these natural and frequent internal and external events. At any given point in time, people have a limited supply of physical energy, attentional, and self-regulatory resources (Muraven & Baumeister, 2000; Widiger & Trull, 1991). Researchers have found support for the notion that self-regulatory skills are a limited resource and too much exertion weakens one's abilities to be effective in subsequent tasks. This limited resource model is of relevance to understanding the psychological health of people with excessive social anxiety. Several studies by Vohs et al. (2005) found a cyclical relation such that depleting self-regulation in a given task reduces the ability to effectively engage in impression management, and effortful impression management drains and impairs self-control in successive demanding tasks. The paradox is that excessive attempts to make a positive impression, be less anxious, and avoid rejection lead to a depletion of the necessary self-control resources to effectively prevent socially undesirable behaviors. This includes inappropriately self-disclosing intimate details, being unresponsive to the feelings and interests of social interaction partners, and being increasingly physiologically aroused and anxious (e.g., Gross, 1998; Vohs et al., 2005).

Besides fearing and avoiding social situations, there is growing recognition that people can also fear and avoid socially anxious thoughts, images, feelings, and bodily sensations (experiential avoidance; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). When this happens, the feared stimulus cannot be easily avoided as these anxious reactions derive from within. When fears span the anticipation, experience, and aftermath of social interactions, or any period of internal processing about one's social attractiveness, activity, and functioning, there are abundant opportunities to deplete limited regulatory resources. With this broadened scope of feared situations, it is easy to imagine how excessive social anxiety may interfere with curiosity and positive experiences during social and non-social events. In addition, routinely acting in ways to alter, control, and avoid anxiety before, during, and after perceived social situations out of fear of experiencing anxiety, may play a formative role in how excessive social anxiety eventually erodes regulatory resources and positive outcomes. Of particular concern is the degree to which life choices are made to alter and avoid anxiety and the situations that might evoke them at the expense of living in congruence with personal values and strivings (Forsyth, Eifert, & Barrios, 2006). In this model, important determinants of the diminished positive outcomes of socially anxious people include the degree to which anxious reactions are viewed as harmful, how they are tolerated, and the efforts undertaken to regulate them.

The existence of satisfying social interactions and relationships is the most distinguishing characteristic of very happy people (Diener & Seligman, 2002; Myers & Diener, 1995). When adults are asked to retrospectively examine their lives, the greatest source of satisfaction and meaning tends to be social relationships (Sears, 1977). Socially anxious people are confronted with an approach-avoidance conflict between desiring these social outcomes and fears that (a) rejection is inevitable and (b) socializing will cause unwanted anxious feelings, thoughts, and sensations. In response, people with greater social anxiety are more likely to deplete their self-regulatory resources during rigid attempts to control and conceal anxious thoughts (e.g., Amir, Foa, & Coles, 1998; Fehm & Margraf, 2002) and the

expression of positive and negative emotions (Kashdan & Steger, 2006; Turk, Heimberg, Luterek, Mennin, & Fresco, 2005). The motivation to avoid anxiety and rejection at the expense of cultivating positive experiences and social relationships can lead to an insulated and depleted existence.

### 3. The current study

Theory and data support an examination of social anxiety as a predictor of diminished positive affect and curiosity. The prior theoretical synthesis provides an initial framework of how excessive social anxiety might lead people to incur deficits in positive experiences. The model suggests a series of causal sequences among social anxiety, self-regulatory processes, and diminished positive experiences. However, an initial link needs to be established. In this paper, analyses were confined to whether the social anxiety spectrum was related to positive affect and curiosity.

The present study was the first quantitative review, using meta-analytic techniques, aggregate studies on relations between the social anxiety spectrum and positive experiences. Three main questions were addressed. First, to what extent was the social anxiety spectrum (inversely) related to positive affect and curiosity? Second, possible moderators of these relations were investigated, including operationalizing social anxiety as a continuum or the presence/absence of disorder (SAD) and research methodology. Positive affect and curiosity were examined as dispositional traits (personality questionnaires) and emotional states manipulated in experiments or recorded with diary methods. Of interest was whether meta-analytic relations differed for short-term momentary experiences of positive emotions and curiosity (states) compared to cumulative long-term patterns (traits). Third, meta-analyses of specificity tests were conducted. That is, the mean effect size of relations between the social anxiety spectrum and positive experiences after statistically controlling for other negative affective conditions (e.g., depressive symptoms and disorders). Several theoretical models of anxiety and depression suggest that general negative affect is common to both conditions whereas diminished positive affect and engagement in pleasant events are limited to depression (Clark & Watson, 1991; Davidson, 1994). Despite support for the distinction between general anxiety conditions and depression (e.g., Burns & Eidelson, 1998; Clark, Steer, & Beck, 1994; Watson et al., 1995), there has been only peripheral attention as to whether diminished positive experiences differentiate depression from the social anxiety spectrum. The vast majority of studies testing this model (which includes somatic arousal as the anxiety specific factor) did not assess social anxiety. The meta-analytic tests were conducted as an initial step of the more comprehensive theoretical framework outlined.

### 4. Method

#### 4.1. Literature search

To gather appropriate research on the social anxiety spectrum and positive experiences, computer databases examining articles from 1950 to July 2005 were searched. *PsycINFO* and *MEDLINE* were explored, primarily using the keywords of: social anxiety, social anxiety disorder, social phobia, fear of negative evaluation, anxiety, anxious, rejection sensitivity, interpersonal sensitivity, and public speaking and performance anxiety. Next, the *Social Sciences Citation Index* was searched for all publications that cited any relevant article obtained. Additionally, once relevant references were obtained, the reference list of each article was examined for others. To uncover unpublished research, the *Dissertation Abstracts International* database was explored using the same keywords as above. In addition, conference proceedings of the Association for Advancement of Behavior Therapy (AABT) and Anxiety Disorders Association of America (ADAA) over the last 10 years were examined, and various authors in the field of social anxiety were contacted where possible (including authors of uncovered articles).

Studies were included in the meta-analysis if they met the following criteria: (1) included a published measure (i.e., journal article or corporate publication) of social anxiety or SAD, (2) included a published self-report scale of positive affect or curiosity, or used experimental or experience-sampling procedures, and (3) reported correlations between a social anxiety spectrum measure and positive experiences, or tests of groups differing in social anxiety on measures of positive experiences (e.g., *t*-test, *F*-test). Tables 1 and 2 provide information on the predictor and outcome measures for each study included in the final analyses. Using the aggregate approach described by Lipsey and Wilson (2001), composites were made when a study used multiple measures of independent or dependent variables of the same construct using the same measurement strategy. We excluded studies from the meta-analysis if data were not provided



Table 1

Studies examining social anxiety spectrum and positive affect

Authors	Design	Participants	Social anxiety scale	Positive affect scale	Specificity covariate	Zr <sup>a</sup>
Brown et al. (1998)	Cross-section	350 adult outpatients (52 with SAD)	Composite (ADIS-IV-L ratings SIAS, SCS-SA)	PANAS-PA	Composite (ADIS-IV-L mood disorders, BDI-II)	.42 <sup>b</sup> , .29
Chorpita et al. (2000)	Cross-section	100 youth outpatients (33 with SAD)	ADIS-IV-C/P severity ratings	4 PA items from CDI and RCMAS	ADIS-IV-C/P severity rating for depression	.39, .46
Epkins (2004)	Cross-section	116 youth composite outpatients	Composite (SPAI-C, SASC-R)	PANAS-PA	CDI	.32 <sup>c</sup> , .08
Hughes et al. (2006)	Cross-section	148 adult outpatients	Composite (SIAS, LSAS)	MASQ-Anhedonia	MASQ-General Distress Anxiety and Depression subscales	.45, .18
Kashdan (2002)	Cross-section	204 college students	SIAS	composite (PANAS-PA, Subjective Vitality Scale)	CES-D	.42, .28
Kashdan (2004)	Cross-section	97 college students	SIAS	Subjective Vitality Scale	MASQ-Nonspecific Depression	.45, .27
Kashdan and Breen (2006)	Cross-section	145 college students	SIAS	PANAS-PA (composite of Time 1 and 2)	BDI-II	.38, .16
Kashdan, Collins, et al. (2003)	Experience-sampling	38 adults from community	SCS-SA	3 PA items: happy, excited, and relaxed	no test	.28
Kashdan et al. (2006)	Cross-section	77 veterans (57 with PTSD)	SIAS	PANAS-PA	PANAS-NA and PTSD	.76, .33
Kashdan and Roberts (2004)	Social interaction experiment	98 college students	High/low groups from SIAS and SPS	PANAS-PA	BDI-II	.33 <sup>d</sup> , .16
Kashdan, Roberts, and Kelly (2002)	Cross-section	44 outpatients with depressive disorders	SIAS	PANAS-PA	BDI-II	.54, .32
Kashdan and Steger (2006)	Experience sampling	97 college students	SIAS	9-item PA adjectives (5 from PANAS-PA)	CES-D	.24, .06
Norton et al. (2005)	Cross-section	594 college students (538 for specificity)	Composite (BFNE, IAS)	PANAS-PA	BDI-II	.22, .11
Vittengl and Holt (1998)	Experience sampling	49 college students	High/low groups from SAD and FNE	PANAS-PA	No test	.32
Wallace and Alden (1997)	Social interaction experiment	32 with SAD and 32 controls	ADIS-revised	PANAS-PA	No test	.58
Walters (2001)	Cross-section	70 youth (27 with SAD)	ADIS-C	PANAS-PA	No test	.41
Watson et al. (1988)	Cross-section	150 adult outpatients (21 with SAD)	DIS 3.0	Positive emotionality subscale from MPQ	DIS 3.0 for major depressive disorder	.23, .12 <sup>e</sup>
Watson et al. (2005 Study 1)	Cross-section	526 combat veterans	SCID symptoms	Positive temperament subscale from SNAP	No test	.28
Winning (1995)	Cross-section	44 with SAD and 15 controls	ADIS-revised	PANAS-PA	No test	.35

ADIS-IV-L=Anxiety Disorders Interview Schedule for DSM-IV-Lifetime Version (DiNardo, Brown, & Barlow, 1994); BDI-II=Beck Depression Inventory (Beck, Steer, & Brown, 1996); ADIS-IV-C/P=Anxiety Disorders Interview Schedule for DSM-IV Child and Parent Versions (Silverman & Albano, 1996); CDI=Children's Depression Inventory (Kovacs, 1981); RCMAS=Revised Children's Manifest Anxiety Scale (Reynolds & Richmond, 1978); SPAI-C=Social Phobia and Anxiety Inventory for Children (Beidel, Turner, & Morris, 1995); SASC-R=Social Anxiety Scale for Children-Revised (La Greca & Stone, 1993); PANAS=Positive and Negative Affect Schedule (Watson, et al., 1988); NA=Negative Affect; MASQ=Mood and Anxiety Symptom Questionnaire (Watson & Clark, 1991); LSAS=Liebowitz Social Anxiety Scale (LSAS; Liebowitz, 1987); SPS=Social Phobia Scale (Mattick & Clarke, 1998); CES-D=Center for Epidemiological Studies Depression Scale (Radloff, 1977); BFNE=Brief Fear of Negative Evaluation Scale (Leary, 1983a); IAS=Interaction Anxiousness Scale (Leary, 1983b); DIS 3.0=Diagnostic Interview Schedule (Robins, et al., 1981); MPQ=Multidimensional Personality Questionnaire (Tellegen & Waller, in press); SCID=Structured Clinical Interview for DSM-IV (First, Spitzer, Gibbon, & Williams, 1997); SNAP=Schedule for Nonadaptive and Adaptive Personality (Clark, 1993); SAD/FNE=Social Avoidance and Distress/Fear of Negative Evaluation Scales (Watson & Friend, 1969).

<sup>a</sup> Zr indicates Fisher's z-to-r transformation; the first Zr reflects a bivariate relationship and the second reflects a specificity test.

<sup>b</sup> Data for zero-order factor correlation and specificity test with composite index of depression (Timothy Brown, personal communication, August 27, 1999).

<sup>c</sup> Additional data were obtained from the author (Catherine Epkins, personal communication, December 13, 2004).

<sup>d</sup> All analyses statistically controlled for baseline levels of positive affect.

<sup>e</sup> Additional data for partial correlation with major depressive disorder (David Watson, personal communication, August 10, 1999).

Table 2  
Studies examining social anxiety spectrum and curiosity

Authors	Design	Participants	Social anxiety scale	Curiosity scale	Specificity covariate	Zr <sup>a</sup>
Henning, Hambrick, Heimberg, and Fresco (2004)	Cross-section	76 outpatients with SAD	Composite (SIAS, LSAS)	Need for Cognition Scale	No test	.21
Kashdan (2002)	Cross-section	204 college students	SIAS	Composite (STCI-Trait, CEI)	CES-D	.37, .30
Kashdan (2004)	Cross-section	97 college students	SIAS	Composite (STCI-Trait, CEI)	MASQ-Nonspecific Depression	.33, .30
Kashdan et al. (2006)	Experience-sampling	55 veterans (27 with PTSD)	SIAS	2-item measure of daily curiosity and exploration	PANAS-NA and PTSD	.32, .16
Kashdan and Roberts (2004)	Social interaction task	98 college students	High/low groups from SIAS and SPS	STCI-State	BDI-II	.18 <sup>b</sup> , .03
Kennedy, Schwab, and Hyde (2001)	Cross-section	24 outpatients with SAD and 32 controls	SCID	Novelty Seeking subscale of Tridimensional Personality Questionnaire	No test	.24
Kim and Hoover (1996)	Cross-section	47 outpatients with SAD and 40 controls	SCID	Novelty Seeking subscale of Tridimensional Personality Questionnaire	No test	.11
Mueller and Grove (1991)	Cross-section	98 college students	SCS-SA	Need for Cognition Scale	No test	.24
Mueller, Haupt, and Grove (1988)	Cross-section	71 college students	SCS-SA	Need for Cognition Scale	No test	.16
Mueller and Johnson (1990)	Cross-section	20 college students and 20 older adults	SCS-SA	Need for Cognition Scale	No test	.42
Osberg (1987) (Study 1)	Cross-section	220 college students	SCS-SA	Need for Cognition Scale	No test	.31
Osberg (1987) (Study 2, sample 1)	Cross-section	66 college students	SCS-SA	Need for Cognition Scale	No test	.29
Osberg (1987) (Study 2, sample 2)	Cross-section	47 prison inmates	SCS-SA	Need for Cognition Scale	No test	.40
Pelissolo et al. (2002)	Cross-section	780 community (178 with SAD)	M-CIDI	Novelty Seeking Subscale of Temperament and Character Inventory	No test	.19
Plant and Ryan (1985)	Non-social experimental task	96 college students	SCS-SA	time spent on task during free-choice period as index of curiosity	No test	.28

STCI-T=State-Trait Curiosity Inventory-Trait (Spielberger, 1979); CEI=Curiosity and Exploration Inventory (Kashdan, Rose, & Fincham, 2004); Need for Cognition Scale (Cacioppo & Petty, 1982); Tridimensional Personality Questionnaire (Cloninger, 1987); Temperament and Character Inventory (Cloninger, Przybeck, Svrakic, & Wetzell, 1994); M-CIDI=Munich-Composite Diagnostic Interview (social phobia section; Wittchen & Pfister, 1997).

<sup>a</sup> Zr indicates Fisher's z-to-r transformation; the first Zr reflects a bivariate relationship and the second reflects a specificity test.

<sup>b</sup> All analyses statistically controlled for baseline levels of curiosity.

to directly examine relations between social anxiety and positive experiences or if data were not available to reliably compute effect sizes and inverse variance weights.

Out of 43 studies initially detected in the literature review, 19 and 15 studies were in the final meta-analytic examination of relations between the social anxiety spectrum with positive affect ( $n=2976$ ) and curiosity ( $n=2091$ ), respectively. Despite reporting a moderate inverse relation between social anxiety and positive emotions,  $r=-.35$ , one study was excluded for not including a published social anxiety measure (study 2; Watson, Gamez, & Simms, 2005). One study was excluded because data were not available on direct relations between social anxiety and positive emotions (e.g., clients with SAD and panic disorder were compared; Simon et al., 2002). Six studies were excluded that examined relations between the social anxiety spectrum and the broad criterion quality-of-life, conceptualized as the belief that personally valued strivings have been satisfied in meaningful life domains (Frisch, 1998). Collapsing across positive affect and curiosity, 79% of the studies detected by the literature search were used in meta-analyses.

#### 4.2. Statistical methods

The results primarily followed established psychometric meta-analytic procedures (see [Lipsey & Wilson, 2001](#) for details). Using random-effects models, analyses were conducted with SPSS macros (see Appendix D in [Lipsey & Wilson, 2001](#)). Mean effect sizes were expressed as correlation coefficients, consequently requiring the conversion of *t*-scores, *d*-scores, and *F*-scores, and beta coefficients where necessary and possible. To adjust for the non-normal distributions of Pearson correlations, effect size correlation estimates were transformed into Fisher *z* scores (*Zr*) prior to additional analysis. Meta-analytic findings were derived from weighted mean effect sizes. Analysis with the *Zr* effect sizes used the inverse variance weight method, thus giving more precise estimates greater weight than less precise estimates. Final results were converted back to correlation coefficients for meaningful interpretation.

The overarching goal was to determine the overall significance and confidence interval (i.e., precision of measurement) of the combined mean effect size estimate across studies. Regarding the interpretation of correlation coefficients, a small effect is considered around .10, a moderate effect about .25, and a strong effect around .40 or greater (see [Lipsey & Wilson, 2001](#) for application of [Cohen, 1988](#) “rules of thumb” to correlation coefficient effect sizes).

The Homogeneity Analysis, or *Q* test, was calculated to examine whether the variability in effect sizes was explainable by sampling error. A significant *Q* test would reject the homogeneity hypothesis, suggesting that variability in mean effect sizes was attributable to more than sampling error such as the influence of specific study characteristics. Finally, to examine robustness of our findings to the “file drawer” problem, the Fail Safe *N* was calculated, indicating the number of additional unpublished studies with a null effect required to reduce a significant meta-analytic finding to a trivial relationship, defined in this case as an effect size level of  $r = .10$  ([Rosenthal, 1991](#)).

#### 4.3. Meta-analytic categories

The meta-analyses were classified into two super-ordinate categories. First, meta-analyses were conducted on relations between the social anxiety spectrum with positive affect and curiosity. Second, meta-analytic specificity tests were conducted to determine whether the social anxiety spectrum was related to positive affect and curiosity over and above the variance accounted for by other negative affective states (e.g., partial correlations in existing data sets). For tests of specificity, the type of covariate under study was classified (e.g., depressive symptoms, depressive disorders).

#### 4.4. Possible moderator variables coded from each study

Several study characteristics were coded in hopes of elucidating possible moderators that account for variance in meta-analytic results (i.e., following a significant *Q* test). Variables coded for each study that were of interest included: (1) operationalizing social anxiety as a continuum or people meeting diagnostic criteria for SAD, (2) the social anxiety measure used, (3) the positive affect or curiosity measure used, (4) research design (cross-sectional, experience-sampling, experiment), (5) age group under study (children, adolescents, young adult, adult, elderly), (6) population (clinical sample, college students, community, youth), (7) published versus unpublished (e.g., conference presentation, dissertation) data, and (8) time frame under assessment for outcome measures (traits or states). For tests of specificity, the type of covariate under study was examined as a potential moderator. The type of association between variables (association between two continuous variables, comparison of extreme groups, experimental effects on outcomes) was examined as a moderator. It has been suggested that examining a construct as a continuum versus the selection of extreme groups designs leads to differences in the power to detect effects ([Cortina & DeShon, 1998](#)). Thus, to supplement moderator analyses, findings for each group will be reported separately.

#### 4.5. Study characteristics

The characteristics and findings of studies meeting our inclusion criteria are summarized in [Tables 1 and 2](#). These tables evidence considerable methodological variability. Of the 19 studies on positive affect, eight studies used samples of outpatients diagnosed with SAD, 13 measured positive affect with the 10-item Positive Affect subscale of the Positive and Negative Affect Schedule (PANAS; [Watson, Clark, & Tellegen, 1988](#)) or it was part of a composite, 9 measured social anxiety with the Social Interaction Anxiety Scale (SIAS; [Mattick & Clarke, 1998](#)) or it was part of a



Table 3

Summary table of meta-analytic findings for the social anxiety spectrum and positive experiences

Construct	<i>K</i>	<i>N</i>	$\bar{r}$ for bivariate relationships		<i>K</i>	<i>N</i>	$\bar{r}$ for specificity tests	
			$\bar{r}$	95% Confidence Interval			$\bar{r}$	95% Confidence Interval
Positive Affect	19	2976	-.36	-.31 to -.40	13	2164	-.21	-.16 to -.26
Curiosity	15	2091	-.24	-.20 to -.28	4	454	-.21	-.08 to -.32

For these meta-analytic results for random-effects models, all Fisher *z* scores (*Z<sub>r</sub>*) were converted back to correlation coefficients for meaningful interpretation.

composite, and in terms of research design, 14 studies were cross-sectional, 3 studies used experience-sampling techniques, and 2 used social interaction experiments. Of the 15 studies on curiosity, 3 studies used samples of outpatients diagnosed with SAD, 5 measured social anxiety with the SIAS or it was part of a composite and 7 with the Self-Consciousness Scale-Social Anxiety (SCS-SA; Fenigstein, Scheier, & Buss, 1975), and 12 studies used cross-sectional research designs. Heterogeneity of variance in the effect sizes might suggest that the methodological differences moderate observed findings.

## 5. Results

### 5.1. Bivariate relations

Of initial interest was whether there were overall relations between the social anxiety spectrum with positive affect and curiosity. As hypothesized, significant inverse relations were found (see Table 3). The mean weighted effect sizes (accounting for sample size differences in individual studies) for the social anxiety spectrum were indicative of significantly diminished positive affect,  $r = -.36$  (95% CI:  $-.31$  to  $-.40$ ;  $z = 13.58$ ,  $P < .001$ ) and curiosity,  $r = -.24$  (95% CI:  $-.20$  to  $-.28$ ;  $z = 11.09$ ,  $P < .001$ ). Effect sizes of this magnitude are considered to be of moderate magnitude and visible to the naked eye (Cohen, 1988). The lower 95% confidence limits failed to cross zero in any analysis. An examination of confidence intervals suggests only a 2.5% probability that population effect sizes between social anxiety and positive affect and curiosity were unlikely to be closer to zero than  $-.31$  and  $-.20$ , respectively.

### 5.2. Moderating variables

Of two tests of homogeneity of variance, one was significant. The homogeneity statistic was significant for the mean weighted effect size between the social anxiety spectrum and positive affect,  $Q(18) = 35.40$ ,  $P = .008$ , indicating systematic variability in the magnitude and/or direction of this effect across studies. To attempt to account for this variability, potential moderating variables were examined. Moderators of the relation between the social anxiety spectrum and positive affect included the type of association between variables, operationalizing social anxiety as a continuum versus the presence/absence of SAD diagnoses, different assessment instruments, research design, measuring positive emotion states compared to traits, different age groups and populations, and published versus unpublished findings.

#### 5.2.1. Initial moderator of association between social anxiety and positive affect: Contrasting studies with continuous variables, experimental designs, and extreme groups

Follow-up analyses were conducted to unpack the inverse association between social anxiety and positive affect. There is evidence that experimental studies and studies using extreme groups (e.g., clients with SAD versus a non-clinical control group) exhibit greater power to detect the existence of hypothesized effects (Cortina & DeShon, 1998). There were only two experimental studies in our meta-analysis and each also used extreme group designs. Thus, these two studies were excluded from our moderator test. Overall, no significant differences were found between the effect sizes of studies using continuous independent and dependent variables and those using extreme groups,  $Q(1) = .56$ ,  $P = .45$  (of note, comparisons between the three groups was also non-significant at  $P = .59$ ). However, the  $Q$ -test tends to have exceptionally low power in detecting true moderators (National Research Council, 1992). Thus, the observed impact of moderators will be discussed as an adjunct to the statistical significance of  $Q$ -tests, recognizing the tentative nature of conclusions drawn from these differences.

An examination of the magnitude of relations between the social anxiety spectrum and positive affect for the three groups found similar effect sizes for studies using two continuous variables ( $n=11$ ;  $r=-.38$ , 95% CI:  $-.33$  to  $-.42$ ,  $z=15.49$ ,  $P<.001$ ) and extreme groups ( $n=6$ ;  $r=-.32$ , 95% CI:  $-.27$  to  $-.37$ ,  $z=11.68$ ,  $P<.001$ ). Slightly larger effects were found for the two experimental studies that also used an extreme group design ( $n=2$ ;  $r=-.41$ , 95% CI:  $-.27$  to  $-.52$ ,  $z=5.34$ ,  $P<.001$ ), but the inclusion of only two studies should be taken into consideration.

### 5.2.2. Other moderators

Social anxiety or SAD was assessed with various different instruments. Upon examining differences between different self-report and interview methodologies, statistically significant differences were found between groups,  $Q_{\text{between}}(8)=18.91$ ,  $P=.02$ . Slightly larger mean effect sizes were found for studies using the SIAS or versions of the Anxiety Disorder Interview Schedule ( $r_s=-.44$  or  $-.40$ , respectively) whereas the smallest effect sizes were found for the two studies using the Brief Fear of Negative Evaluation Scale (BFNE; Leary, 1983a) and Diagnostic Interview Schedule 3.0 (Robins, Helzer, Croughan, & Ratcliff, 1981), respectively ( $r_s=-.14$  and  $-.23$ ). The small effect size for the BFNE can be explained by recent work suggesting that the validity of the scale is compromised by inclusion of the reverse-scored items, which load on a separate factor from the straightforwardly worded items (Rodebaugh et al., 2004). Also, other data indicate that this scale does not correlate with other social anxiety scales or reliably differentiate excessive social anxiety from other conditions as well as other scales (Miller, 1995). These data suggest that the selection of instruments should be carefully considered before interpreting data on the social anxiety spectrum or embarking on a research program.

In terms of assessing positive affect, the test of mean effect sizes for studies that did ( $n=13$ ) and did not ( $n=6$ ) use the PANAS was not significant,  $Q_{\text{between}}(1)=1.41$ ,  $P=.24$ . In terms of assessing trait positive affect ( $n=14$ ) compared to state or daily positive emotions ( $n=5$ ), there was no significant difference in the relation with the social anxiety spectrum,  $Q_{\text{between}}(1)=.27$ ,  $P=.60$ .

As for other moderators, across studies, there was a wide range of representative age groups and populations. There was no evidence that mean effect sizes differed across age groups,  $Q_{\text{between}}(4)=1.36$ ,  $P=.85$ . However, mean effect sizes significantly varied between populations under study,  $Q_{\text{between}}(3)=8.11$ ,  $P=.04$ . Mean effect sizes were of the largest magnitude in clinical samples ( $r=-.41$ ; 95% CI:  $-.35$  to  $-.46$ ), slightly less in youth samples ( $r=-.35$ ; 95% CI:  $-.25$  to  $-.45$ ) and college samples ( $r=-.35$ ; 95% CI:  $-.31$  to  $-.40$ ) and community or non-clinical veteran samples ( $r=-.27$ ; 95% CI:  $-.20$  to  $-.35$ ). Across populations, the stability of effect sizes was relatively equivalent.

### 5.3. Specificity tests

Of additional interest was whether relations between the social anxiety spectrum and positive experiences were better accounted for by shared variance with other negative affective states such as depressive symptoms and disorders. The majority of specificity tests used depressive symptoms and/or disorders as a covariate (i.e., 11 of 13 for positive affect, 3 of 4 for curiosity). As reported in Table 3, the data suggest that the social anxiety spectrum has unique, inverse relations with positive experiences. The mean weighted effect sizes of construct specificity tests were indicative of significantly diminished positive affect,  $r=-.21$  (95% CI:  $-.16$  to  $-.26$ ;  $z=7.91$ ,  $P<.001$ ) and curiosity,  $r=-.21$  (95% CI:  $-.08$  to  $-.32$ ;  $z=3.12$ ,  $P=.002$ ). There was only a 2.5% probability that effect sizes of specificity tests between social anxiety and positive affect and curiosity were unlikely to be closer to zero than  $-.16$  and  $-.08$ , respectively.

### 5.4. Publication selection bias

There was no evidence of significant differences in the mean effect sizes between published and unpublished reports,  $Q_{\text{between}}(1)=1.09$ ,  $P=.30$ . The inverse relation between the social anxiety spectrum and positive affect was minimally greater and stable in published ( $r=-.37$ ; 95% CI:  $-.33$  to  $-.41$ ) compared to unpublished ( $r=-.33$ ; 95% CI:  $-.28$  to  $-.38$ ) reports. These data are not supportive of a selection bias hypothesis (i.e., increased likelihood that statistically significant effects will be published).

The Fail Safe  $N$  was calculated to assess how many “missing” null studies (file-drawer studies) need to exist to reduce the above findings to a trivial level (Rosenthal, 1991). To lower the mean effect size of relations between the social anxiety spectrum with positive affect and curiosity to a trivial level of  $r=.10$  would require the existence of 2316

and 624 unpublished study findings with null results (based on methods in Rosenberg, 2005). Because this seems like an unreasonably large number of suppressed studies (and the current meta-analysis included several unpublished studies), the results of this meta-analysis appear to be robust to publication selection bias.

To lower the mean effect size of specificity tests of associations between the social anxiety spectrum with positive affect and curiosity would require the respective presence of 375 and 29 unpublished study findings with null results. Thus, data on the specificity of social anxiety spectrum effects appear robust to publication selection bias.

## 6. Discussion

The primary objective of this meta-analysis was to examine whether social anxiety was associated with diminished positive experiences. Support was found for these relations with mean effect sizes in the moderate range (Lipsey & Wilson, 2001). These relations were not mediated by comorbidity with depressive symptoms and disorders or other emotional disturbances. Although it was necessary to control for variance attributable to depression to ensure the effects of the social anxiety spectrum were not redundant, these more conservative analyses are in some ways problematic. First, social anxiety and depression are highly comorbid with several shared features such as excessive negative self-focused attention, ruminative tendencies, perfectionism, unassertiveness, and avoidance behaviors that are not a “measurement bias” to be controlled for. Second, the assessment of depression includes items reflecting loss of interest or pleasure and thus, there was content overlap with the meta-analytic outcome measures (i.e., positive experiences). Third, diminished positive experiences are considered a criterion that discriminates depression from excessive social anxiety (e.g., APA, 2000). Thus, as conservative tests of specificity, finding social anxiety to account for an additional 4–5% of the variance in positive experiences after accounting for the variance attributable to depression should be considered meaningful and non-trivial. The magnitude of effects needs to be interpreted in the context of the constructs under study and analyses conducted (in this case, tests of construct specificity; Abelson, 1985; Hemphill, 2003).

The magnitude and direction of relations between social anxiety and diminished positive affect and curiosity were consistent across studies with different research designs, assessment instruments, age groups, and publication status. There was one exception. The relation between the social anxiety spectrum and positive affect was weaker in studies with college and community samples than those with clinical samples. One explanation is that clinical samples may respond differently to questions and stimuli compared to community samples. For example, treatment-seeking tends to occur only when social anxiety symptoms cause sufficient suffering and functional impairment. Some clients may exaggerate their distress, impairment, and diminished appetitive functioning as a “cry for help.” There is also evidence that the majority of socially anxious clients wait years before seeking help, if at all (Olsson et al., 2000), and markers of positive health may be particularly restricted by the time they are assessed and seek treatment. As an alternative explanation, the methodology employed to assess the social anxiety spectrum in clinical settings may be more reliable and valid. Face-to-face structured clinical interviews in research clinics provide data on emotional expressive-motor responses that are not available with other assessment strategies (e.g., self-report inventories, telephone interviews). More data are needed on the generalizability of social anxiety findings with clinic samples to the general population. Additionally, a greater range of negative and positive affect can be expected in a community sample compared to the truncated range of emotional experience and expression in patients. Taxometric investigations are needed to test whether people with SAD are qualitatively different from sub-clinical samples on the positive spectrum of human functioning. Despite significant findings, the small to moderate magnitude of relations suggests that people with excessive social anxiety may be a relatively heterogeneous group. Socially anxious people can report a range of positive affect and curiosity from being relatively deficient to a subgroup with emotional disturbances and elevated levels of positive experiences. More information is needed on the processes that moderate and mediate vulnerability and resiliency in people with excessive social anxiety and whether subgroups can be empirically identified.

### 6.1. Theoretical and empirical considerations

In the introduction, several models of social anxiety (Baumeister & Tice, 1990; Clark & Wells, 1995; Gilbert, 2001; Leary, 2000) were synthesized to elaborate a possible framework of how and why excessive social anxiety may lead to diminished positive experiences. From a self-regulatory perspective, the chronic social evaluative concerns of people with greater social anxiety lead to excessive self-regulation (including experiential avoidance and impression

management) with the consequential depletion of limited resources during this mobilization process including (but not limited to): attention, vitality, self-control, engagement, exploratory behavior, and effortful cognitive and emotional processing. In addition, these individuals may be less willing to tolerate and less able to manage anxious reactions, and demonstrate less ability to rebound from prevention to promotion orientations to everyday living.

Less socially anxious people are proposed to flexibly adapt to social threat whereas people with excessive social anxiety are primarily motivated to avoid threat and anxiety with the unintended effect of interfering with reward exposure and reactivity (Kashdan & Steger, 2006; Trower & Gilbert, 1989). There is other evidence to support a model in which excessive social anxiety involves an underactive approach system as an adjunct to an overactive avoidance system. People with excessive social anxiety demonstrate faster reaction times and greater cortical activity in response to faces with critical, angry, and contemptuous expressions but less neurological activity, slower reaction times, and poorer memory for accepting and happy faces (Foa, Gilboa-Schechtman, Amir, & Freshman, 2000; Gilboa-Schechtman et al., 1999; Stein et al., 2002). There is also evidence that cortical activity specific to approach-oriented behavior (e.g., left-sided pre-frontal cortex asymmetry) is less pronounced in socially anxious people compared to controls in anticipation of giving a public speaking task (Davidson, Marshall, Tomarken, & Henriques, 2000). In other work, in the absence of looming threat, people generally exhibit a weak bias toward positive interpretations of the environment and approach behavior (Cacioppo & Berntson, 1994). Interestingly, laboratory studies consistently find that people with greater social anxiety fail to exhibit this positive offset (Garner, Mogg, & Bradley, 2006; Hirsch & Mathews, 2000; Silvia et al., 2006). Finally, neurological markers of reward sensitivity and positive affect (i.e., dopaminergic activity) tend to be deficient in socially anxious people (Schneier et al., 2000; Tiihonen et al., 1997). To better understand the sequelae of social anxiety, refinements are needed in the operationalization of emotion-related terms such as parsing reactivity into thresholds, latency, intensity, and recovery time, and evaluating flexibility via intra-individual reactions to different situational demands (Davidson, Goldsmith, & Scherer, 2003).

Taken together, these findings can be interpreted in several ways. Socially anxious people may exhibit general impairments in processing and responding to rewarding stimuli, leading to diminished positive experiences. Alternatively, they may experience difficulty recovering from an overactive aversive system to threat and danger cues, and the effortful expenditure of self-regulatory resources, to return to neutral or approach-oriented modalities. They may be less prone to appraise novel, complex, and challenging stimuli as rewarding or behaviorally respond to appraisals of reward potential. Instead of experiencing an emotional blend of high curiosity and mild anxiety, leading to a strong desire to learn and approach, socially anxious people may be more apt to having avoidance reactions dominate feelings of curiosity and the desire to make the unknown known (Spielberger & Starr, 1994). Although it seems reasonable to model social anxiety as a likely causal agent of diminished positive experiences, the existing data on this neglected topic cannot address causality. It is also plausible that diminished positive affect, curiosity, and exploratory behavior exacerbate social anxiety symptoms (especially in youth with less emotional knowledge) because the behavioral approach systems has a temperamental profile that influences emotional development (Gray & McNaughton, 2000). Yet, it is more difficult to conceive a pathway in which less exposure and reactivity to appetitive activity eventually lead to excessive concerns about being negatively evaluated by others and reliance on social avoidance coping. This pathway requires too many intervening variables and research continually supports the relative independence of approach and avoidance systems at biological and psychological levels of analysis in early development. Various etiological models of the relations under study can be tested and compared using longitudinal research designs.

To better understand the lives of socially anxious people, it is worth considering the cumulative consequences of residual, unsatisfied curiosity. Like all human beings, people with excessive social anxiety experience curiosity under the right conditions. Yet, approach contingencies such as the potential to experience pleasure and meaning from novel and challenging experiences are proposed to be forsaken in favor of relief from avoiding social situations (and unwanted anxious reactions). The toxic nature of social anxiety supposedly becomes evident when low tolerance for distress and avoidance responses predominate in the face of approach contingencies (Forsyth et al., 2006; Hayes, 1976). Despite the intuitive appeal of a model advocating emotional tolerance, experiential avoidance, and self-regulatory processes as mechanisms that interfere with positive experiences, experiments are needed that manipulate these variables in people differing in social anxiety. The value of the model elaborated in this paper is that it leads to testable predictions as to when and why social anxiety interferes with positive experiences during social and non-social contexts.



### 6.2. Additional specificity issues: addressing other anxiety conditions and social anxiety subtypes

Controlling for depression in tests of specificity is more stringent than controlling for trait anxiety or other discrete negative emotional traits. For example, unpublished data show that the construct specificity of social anxiety on positive emotions is stronger when using global negative affect as a covariate ( $r = -.33$ ; Kashdan & Breen, submitted for publication;  $r = -.21$ ; Kashdan & Steger, 2006) compared to the current focus on depressive symptoms ( $r_s = -.16$  and  $.06$ , respectively). However, it is worth discussing whether similar relations with positive experiences are found for other anxiety conditions. Using confirmatory factor analytic models, prior studies have consistently shown that positive affect has no association with other anxiety conditions (Brown, Chorpita, & Barlow, 1998; Chorpita, 2002; Chorpita, Plummer, & Moffitt, 2000; Watson, Clark, & Carey, 1988) and in these and other studies, social anxiety retains inverse relations with positive experiences after statistically controlling for trait anxiety or global negative affect (e.g., Hughes et al., 2006; Kashdan, 2002; Kashdan, Julian, Merritt, & Uswatte, 2006; Watson, et al., 2005). There was no support for pathways between positive affect and panic disorder, generalized anxiety disorder and excessive worrying, obsessive–compulsive disorder, or specific phobia. Zero-order correlations between positive affect and these anxiety conditions ranged between  $-.01$  and  $-.12$  (Watson et al., 1988),  $-.02$  and  $-.23$  (Watson et al., 2005), and in other cases “potential paths from PA [positive affect] to GAD [generalized anxiety disorder], PD/A [panic disorder with and without agoraphobia], and OCD [obsessive-compulsive disorder] were uniformly low (range = 0 to .47), which is indicative of a lack of relationship between PA and these disorders” (Brown et al., 1998, p. 189). Thus, across studies, the evidence supports a model with positive experiences inversely related to depression and social anxiety, but not other anxiety conditions. However, as positive psychological processes are better understood with more refined assessment strategies, it will be important to continually examine the interface between positive functioning and relevant emotion disturbances. For example, despite evidence that GAD is not associated with positive affect, excessive social anxiety and GAD are both associated with less expression of positive emotions and less clarity and understanding of their emotions (Mennin, Heimberg, Turk, & Fresco, 2005; Turk et al., 2005). In the absence of theory and empirical data, it is difficult to define the parameters of how other anxiety conditions are related to curiosity and exploratory behavior.

Another issue is the multi-dimensional nature of the social anxiety spectrum, with evidence of subtypes reflecting social interaction fears (generalized) and performance/observation fears (non-generalized; APA, 2000). Based on a limited self-regulatory resource model, people with the performance subtype may experience less positive emotions and curiosity prior to and during social performance events. However, people can generally work around these circumscribed social events and live satisfying, engaging, and meaningful lives. To the author’s knowledge, only two studies have examined whether there are differential relations between positive experiences and these social anxiety subtypes. As expected, fears of social performance/observation situations are not related to positive affect or curiosity after accounting for the shared variance with social interaction fears (Hughes et al., 2006; Kashdan, 2002). In fact, there was a near-zero relation between measures of social performance and observation anxiety with positive experiences.

### 6.3. Future directions and considerations

The study of positive psychological processes in people differing in social anxiety is still in its infancy. Plenty of data suggest that self-reports of emotional experiences are valid, and arguably the best method to assess how people actually feel (Watson, 2000). Yet, this work needs to be supplemented by examinations of reactivity to objective positive stimuli. It is also worthwhile to begin exploring when and why people with excessive social anxiety are vulnerable to diminished positive experiences. Affect tolerance variables such as emotional acceptance may, theoretically, allow people with excessive social anxiety to better attend to ongoing situational demands and increase their exposure and reactivity to positive events. As initial support for this model (Kashdan & Steger, 2006), social anxiety was associated with fewer everyday social and non-social positive events. People with greater trait social anxiety and a greater tendency to conceal their feelings on days when they had strong socially anxious reactions were the most vulnerable to diminished positive events and experiences. In contrast, the group reporting the most frequent positive events was comprised of people with less social anxiety and greater tendencies to be open and accepting of emotions. These findings can be elaborated with experimental designs. For example, participants can be exposed to social threats and given instructions to be non-judgmental and tolerant of anxious reactions compared to instructions to change existing thoughts and feelings (e.g., trying to relax) or no instructions. Following threat inductions and



intervention instructions, multi-channel reactions to various positive stimuli such as amusing films and sexually erotic material can be evaluated.

The viability of the limited self-regulatory resource model can be tested by using brief, repeated assessments of energy (subjective and physiological), cortical activity associated with approach behavior, and self-control depletion during ongoing tasks. It will be important to include repeated assessments of social anxiety, plausible causal mechanisms, and positive psychological outcomes to examine plausible multi-directional causal sequences. Also, since depression and social anxiety are both associated with diminished positive experiences, it will be useful to examine whether these and related pathways can differentiate these conditions. Due to the conceptual overlap between these conditions and high rates of comorbidity, future examinations of whether depression and social anxiety differ in pathways to diminished positive experiences may be more fruitful in younger populations.

#### 6.4. *Limitations*

Several limitations of this study should be acknowledged. First, due to the correlational nature of most studies to date, discussions of causality should be cautious. Despite a handful of experimental studies, it is not yet possible to determine the temporal relation between the social anxiety spectrum and diminished positive functioning. Second, the current examination was limited to two outcomes, positive affect and curiosity, from a broad range of constructs that reflect hedonic and psychological well-being, and character strengths. Several studies show that social anxiety is inversely related to other positive experiences such as gratitude, forgiveness, hope, creativity, orgasms during sex, and satisfaction with leisure activities (Bodinger et al., 2002; Eng, Coles, Heimberg, & Safren, 2004; Kashdan et al., 2006; Stein & Kean, 2000). However, there are not enough studies in these domains to warrant any clear conclusions about relations with the social anxiety spectrum. Third, a relatively small number of studies were examined in the meta-analyses, with many conducted by the author. While this did not appear to affect the primary findings (see Fail Safe *N* results), statistical power probably affected tests of between-study moderators. Nonetheless, meta-analysis always provides a more accurate estimate of a population parameter than single studies by reducing the effects of sampling error. Fourth, all of the contributing studies were derived from English-speaking countries and most samples were homogenous in terms of socio-demographic characteristics. Cross-cultural and age differences in the prevalence, expression, and phenomenology of the social anxiety spectrum have been documented (e.g., Okano, 1994). There was a moderately strong inverse relation between social anxiety and positive affect in child and adolescent samples in this meta-analysis. A person's developmental stage within the life span may greatly affect the nature and orientation by which they describe emotional states (Labouvie-Vief, Devoe, & Bulka, 1998). More work is needed on the phenomenology of the social anxiety spectrum across age cohorts and the life trajectory and other potential moderating factors. Fourth, because interpersonal impairment and self-regulatory difficulties are relevant to numerous disorders, more work is needed as to whether the theoretical model and meta-analytic findings are non-specific.

#### 6.5. *Conclusions*

The current meta-analytic findings suggest that diminished positive affect and curiosity are relevant to excessive social anxiety, and are not a function solely of depressive disorders or symptoms. These results run counter to dominant theoretical models of emotional disturbances (Clark et al., 1994; Clark & Watson, 1991; Davidson, 1994; Watson et al., 1995). To determine whether diminished positive psychological functioning is an etiological variable, concomitant, or consequence of excessive social anxiety, prospective and experimental investigations will need to assess temporality, specificity, and causality. It was asserted that for people with greater social anxiety, several dimensions of psychological health are compromised by specific information-processing biases and self-regulatory processes. It is hoped the current theoretical synthesis and meta-analytic results encourage further examination of potentially complex relations between the positive and negative spectrums of psychological functioning.

#### **Acknowledgments**

I wish to extend gratitude to David B. Wilson for his invaluable statistical advice and James E. Maddux and Jonathan Rottenberg for comments on earlier versions of this manuscript.

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