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Relationships between psychoevolutionary fear of evaluation, cognitive distortions, and social anxiety symptoms: A preliminary structural equation model

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Social anxiety disorder is a mental health condition that affects 4.7% of Australians each year. The complex interplay between psychoevolutionary and cognitive models has become the focus of research in recent years, particularly with the development of the bivalent fear of evaluation model (i.e., negative and positive evaluation fears). The present study aimed to test a model of social anxiety symptoms using structural equation modelling, integrating previously fragmented evidence. A sample of 255 participants (75.3% female; M_{age} = 31.9, SD = 10.3) undertook an online survey, including Social Phobia Scale, Brief Fear of Negative Evaluation—Straightforward, Fear of Positive Evaluation, Concerns of Social Reprisal, and Disqualifications of Positive Social Outcomes measures. The hypothesised model for social anxiety symptoms described the data reasonably well ($\chi^2(1) = 4.917$, $p = .027$, CFI = .995, GFI = .992, SRMR = .017), explaining 57.1% of social anxiety variance. Study hypotheses were supported with bivalent fear of evaluation accounting for unique variance in cognitive distortions, which in turn accounted for unique variation in social anxiety symptoms. Effect sizes indicate bivalent fears of evaluation and disqualification of positive social outcomes as important predictors of social anxiety symptoms. Although replication in a clinical cohort and experimental confirmation are needed, the findings suggest a focus on disqualification of positive social outcomes to alleviate social anxiety symptoms.

KEYWORDS

bivalent fear of evaluation, cognitive theory, cognitive-behaviour therapy, fear of negative evaluation, psychoevolutionary theory, social anxiety disorder

1 | INTRODUCTION

Social anxiety disorder (SAD) is a mental health issue whereby individuals fear and endure with discomfort or avoid social situations, such as social interaction or performances that may involve social scrutiny (American Psychiatric Association, 2013). SAD has an estimated 12-month prevalence of 4.7% (Australian Bureau of Statistics, 2007) and a lifetime prevalence of 12% (Kessler et al., 2005). Individuals with SAD are more than twice as likely to face unemployment compared with individuals with other anxiety disorders (Moitra, Beard, Weisberg, & Keller, 2011). Given the impact of SAD, it is important to understand the underlying processes that can influence social anxiety symptoms.

Social anxiety traditionally has been understood to be associated with a fear of negative evaluation (FNE) (Watson & Friend, 1969). The relationship between SAD and FNE has been widely supported (Kocijan & Harris, 2016; Lipton, Weeks, & De Los Reyes, 2016; Menatti et al., 2015; Weeks, 2015; Weeks & Howell, 2012; Yap, Gibbs,

Francis, & Schuster, 2016). The feeling of FNE has been thought to be an inherited threat detection system from our psychoevolutionary past that motivates us to modify behaviours in a way that protects us from social harm, such as a loss of access to group resources due to exclusion (Clark & Wells, 1995; Gilbert, 2001). Thinking patterns related to FNE are theorised to intensify and perpetuate social anxiety symptoms (Rapee & Heimberg, 1997).

More recently, fear of positive evaluation (FPE) has been considered in research, suggesting that FNE and FPE co-occur as a bivalent fear of evaluation (BFOE), in which individuals *fear evaluation in general* (Weeks & Howell, 2014). The relationship between SAD and FPE has gained increasing support in recent years (Kocijan & Harris, 2016; Lipton et al., 2016; Menatti et al., 2015; Weeks, 2015; Weeks & Howell, 2012; Yap et al., 2016). Whereas FNE is concerned with a negative shift in evaluation, FPE is concerned with a positive shift in evaluation. The feeling of FPE has been considered as an inherited threat detection system that motivates avoidant behaviour toward being evaluated too favourably, in order to reduce the risk of signalling challenge and inadvertently entering into unnecessary conflict or competition (Trower & Gilbert, 1989; Weeks & Howell, 2014). The thinking patterns surrounding BFOE have not yet been resolved (Heimberg, Brozovich, & Rapee, 2010), and are the focus of this paper.

Weeks and Howell (2012, 2014) suggest that what originates as a psychoevolutionary alarm with BFOE becomes distorted by thinking patterns. When individuals hold strong concerns of social reprisal (CSR) (Weeks, Menatti, & Howell, 2015), they expect that being evaluated too positively puts them at risk of tall poppy syndrome, where others may become jealous, trip them up, or try to "put them in their place". This can lead individuals to engage in disqualification of positive social outcomes (DPSO) (Weeks, 2010), where compliments are inappropriately externally attributed (Heimberg & Becker, 2002). This is done in order to avoid thoughts related to CSR (Weeks & Howell, 2012), acting as a safety-strategy (i.e., a strategy to calm oneself that simultaneously maintains threat perception; Helbig-Lang & Petermann, 2010). Initial support for the role of these thinking patterns was found in several multiple regression analyses by Weeks and Howell (2012). Weeks and Howell (2012) found that FPE accounted for unique variance in concerns for social reprisal and disqualifications of positive social outcomes, which in turn accounted for unique variance in social anxiety symptoms (cognitive, negative social self-statements). However, their design did not simultaneously account for the role of FNE to fully test the BFOE model.

The present study seeks to confirm a BFOE model of social anxiety symptoms, integrating the findings of Weeks and Howell (2012) into a single model, using structural equation modelling (SEM). Due to the strong correlation (study 1: $r = .80$, study 2: $r = .96$) between DPSOS-self and DPSOS-other constructs (Weeks, 2010), DPSOS is hypothesised to be a unitary construct rather than consisting of two distinct factors. It was also hypothesised, based upon the BFOE theory of SAD (Weeks & Howell, 2012), that the SEM model of social anxiety symptoms would feature BFOE in terms of the correlated constructs of FNE and FPE. Finally, based upon the findings of Weeks and Howell (2012), BFOE was hypothesised to account for unique variance in cognitive distortions (i.e., CSR and DPSO), which in turn were hypothesised to account for unique variation in social anxiety symptoms within the SEM model. See Figure 1 for the operationalised conceptual model. Directionality in this model was assumed consistently with cognitive-behavioural theory, with fear of positive and negative evaluation being the psychoevolutionary beginning for social anxiety. Once activated these fears become distorted by thinking patterns (fear information becomes biased by concerns for social reprisal and disqualification of positive social outcomes), with social anxiety symptoms (e.g., avoidance/discomfort) the maladaptive result of these biological and psychological processes.

WHAT IS ALREADY KNOWN ABOUT THE TOPIC?

- Social anxiety disorder involves avoidance of social situations with possible scrutiny.
- Social anxiety symptoms are underpinned by fear of negative evaluation.
- The view of co-occurring fear of positive and negative evaluation underpinning social anxiety symptoms has more recently emerged.

WHAT THIS TOPIC ADDS?

- A model of social anxiety symptoms that accounts for both psychoevolutionary and cognitive predictors.
- Bivalent fear of evaluation explains more of the variance in social anxiety symptoms than fear of negative evaluation alone.
- Effect sizes suggest that the cognitive distortion disqualification of positive social outcomes is an important modifiable predictor of social anxiety symptoms.

2 | METHOD

2.1 | Participants

Two-hundred and fifty-five university students participated in the online survey (75.3% female, 23.9% male, 0.8% no

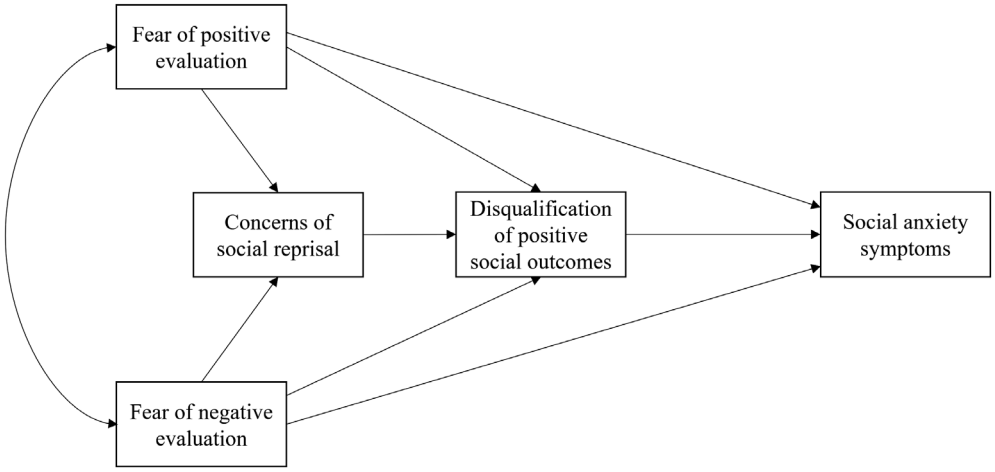

FIGURE 1 Conceptual bivalent fear of evaluation model of SAD

answer), with a mean age of 31.9 (*SD* 10.3) (see Table 1 for a summary). Participants for the present cross-sectional correlational online study participated between April 2016 and April 2017. Psychology undergraduates from an Australian university were recruited in exchange for credit as part of their course. Although non-clinical, the sample had sufficient social anxiety symptoms to test the model. The online questionnaire was approved by the Swinburne University Human Research Ethics Committee (SHR Project 2016/064).

2.2 | Measures

2.2.1 | Social phobia scale

Social Phobia Scale (SPS; Mattick & Clarke, 1998) is a 20-item scale for social anxiety symptoms. It measures fear of public scrutiny (e.g., "I feel awkward and tense if I know people are watching me"). SPS items were measured on a five-point rating scale (0 = "not at all" to 4 = "extremely"), with summed higher scores representing greater social anxiety. A probable SAD subsample was identified using social phobia scores of at least 24, consistent with Heimberg, Mueller, Holt, Hope, and Liebowitz (1992).

2.2.2 | Brief fear of negative evaluation scale—straightforward

Brief Fear of Negative Evaluation Scale—Straightforward (BFNE-S; Weeks et al., 2005) is an 8-item scale that measures fear of negative evaluation (e.g., "I often worry that I will say or do wrong things"). BFNE-S items were measured on a five-point rating scale (1 = "not at all characteristic of me" to 5 = "extremely characteristic of me"), with summed higher scores representing greater FNE. The straightforward version (omitting negatively scored items) was used to be consistent with Weeks and Howell (2012).

2.2.3 | Fear of positive evaluation scale

Fear of Positive Evaluation Scale (FPES; Weeks, Heimberg, & Rodebaugh, 2008) is an 8-item scale that measures fear of positive evaluation (e.g., "I generally feel uncomfortable when people give me compliments"). FPES items were measured on a 10-point rating scale (0 = "not at all true" to 9 = "very true"), with summed higher scores representing greater FPE.

2.2.4 | Concerns of social reprisal scale

Concerns of Social Reprisal Scale (CSRS; Weeks et al., 2015) is a 10-item scale that measures concerns of social reprisal (e.g., "I could see making a good impression on others as being threatening to some people"). CSRS items were measured on a 10-point rating scale (0 = "not at all true" to 9 = "very true"), with summed higher scores representing greater concerns.

2.2.5 | Disqualifications of positive social outcomes scale

Disqualifications of Positive Social Outcomes Scale (DPSOS; Weeks, 2010) are an 11-item scale that measures disqualifications of positive social outcomes (e.g., "I frequently dismiss my own social successes and accomplishments"). DPSOS items were measured on a 10-point rating scale (0 = "not at all true" to 9 = "very true"), with summed higher scores representing greater disqualification.

2.3 | Data analysis strategy

Data analysis was performed in SPSS v24 and AMOS v24. Data were screened for missing or miscoded values. The Fornell and Larckers discriminant validity method was used to test whether the indicators for the DPSOS sub-scales were sufficiently similar to be combined into a single unitary scale (Fornell & Larcker, 1981). Structural equation modelling assumptions regarding sample size, multivariate normality, linearity, multicollinearity (Tabachnick & Fidell, 2014) and directionality (Kline, 2015) were checked. The structural model was analysed using a maximum likelihood SEM with measurement error accounted for using Muncks' method (Munck, 1979). Sample size was guided by the Bentler and Chou (1987) recommendation of a minimum of 5–10 cases per free parameter. Using the upper bracket limit (i.e., 10)

TABLE 1 Participant demographic information

Demographic	*n*	%
Gender		
Male	61	23.9
Female	192	75.3
No answer	2	0.8
Identification with sex at birth		
Yes	249	97.6
No	2	0.8
Equally, neither, or unsure	1	0.4
No answer	3	1.2
Predominantly same-sex attracted		
Yes	30	11.8
No	211	82.7
Equally, neither, or unsure	11	4.3
No answer	3	1.2
Relationship status		
Single	72	28.2
Partnered	41	16.1
Partnered and living together	50	19.6
Married	87	34.1
Separated	5	2.0
Educational level		
Below high school	2	0.8
High school	76	29.8
Certificate, diploma, or trade	120	47.1
Undergraduate degree	45	17.6
Postgraduate degree	12	4.7
Employment status		
Unemployed	39	15.3
Casual or part-time employed	101	39.6
Full-time employed	88	34.5
Homemaker	26	10.2
Retired or unable to work	1	0.4
Country of birth		
Australia	195	76.5
Asia	20	7.8
United Kingdom	10	3.9
Europe (excluding UK)	6	2.2
New Zealand	5	2.0
South Africa	3	1.2
Other	16	6.3
Probable SAD		
No	190	74.5
Yes	65	25.5
Psychiatric medication status		
No	224	87.8
Yes	31	12.2

Note. Probable SAD calculated as a score of ≥24 on the social phobia scale.

and the model containing 14 free parameters, the model would require a minimum sample of 140. Effect sizes with 95% confidence intervals were calculated using 2000 bootstrap samples (Kline, 2016). Transformations for SPS and DSPOS were conducted in order to make the assumptions of normality more valid.

Model fit was evaluated using Kline's (2016) recommendation of a Chi-square test accompanied by three fit indices, such as Comparative Fit Index (CFI; Bentler, 1990), Steiger-Lind Root Mean Square Error of Approximation (RMSEA; Steiger, 1990), and Standardised Root Mean Square Residual (SRMR; Kline, 2016). However, RMSEA is inappropriate for use in a model with low degrees of freedom (Kenny, Kaniskan, & McCoach, 2015). As the present model has only one degree of freedom, the Goodness of Fit Index (GFI) will be used instead as its estimation is not linked to degrees of freedom (Byrne, 2010). Acceptable cut-off values suggested by Hu and Bentler (1999) were applied; CFI > .95, SRMR < .08, and GFI > .90.

3 | RESULTS

3.1 | Descriptive statistics

Several demographic characteristics were correlated to the outcome variable (SPS; see Table 2 for contrasts). Table 3 provides a summary of the scale correlations, means (*M*), *SD*, and internal consistencies (Cronbach alpha) of all measures for both the overall sample, the non-clinical subsample, and the subsample with probable SAD. All variables had moderate positive correlations to each other in a theoretically consistent way. Furthermore, the means for all measures were confirmed as being significantly higher for individuals classified as having probable SAD.

3.2 | DPSOS as a unitary construct

All DPSOS items were simultaneously entered using self- and other-attribution latent factors into an AMOS multifactor confirmatory factor analysis (MF-CFA). The Fornell and Larcker (1981) test was used to test for discriminant validity for these two sub-scales. The correlation square (.767) was larger than the average variance extracted (.661), indicating that these factors are not distinct, rather measuring the same construct. Subsequently, the first hypothesis was supported and DPSOS was considered as a unitary construct.

3.3 | Structural equation modelling

Summated scales were computed for each of the above latent variables in the conceptual model and Munck's method was used to construct and test the conceptual model shown in Figure 1. The hypothesised model described the data reasonably well ($\chi^2(1)= 4.917$, $p = .027$, CFI = .995, GFI = .992, SRMR = .017) and explained 57.1% of the variation in social anxiety symptoms (see Figure 2). All the paths in this model were found to be significant. The hypothesised BFOE correlation (i.e., BFNE-S and FPES) was confirmed ($r = 0.50$, $p < 001$), as was the hypothesised unique variance

TABLE 2 Demographic variables associated with the outcome variable (SPS)

Variable	Contrast (mean SPS score)	*F*-statistic	*P*-value	Effect size
Age	35–49 (11.44) vs. 25–34 (16.81), $p = .016$	$F(3,251) = 10.00$	$p < .001$	$\eta_p^2 = .107$
	35–49 (11.44) vs. 18–24 (22.07), $p < .001$			
Education status	Post-graduate degree (10.08) vs. high school (21.20), $p = .015$	$F(4,250) = 3.67$	$p = .006$	$\eta_p^2 = .055$
Employment status	Unemployed (21.28) vs. full-time employed (13.81), $p = .009$	$F(4,250) = 3.06$	$p = .017$	$\eta_p^2 = .047$
	Unemployed (21.28) vs. homemaker (10.08), $p = .003$			
Relationship status	Single (21.07) vs. partnered and living together (15.08), $p = .025$	$F(4,250) = 5.33$	$p < .001$	$\eta_p^2 = .079$
	Single (21.07) vs. married (10.94), $p < .001$			
Sexual orientation	Heterosexual (14.74) vs. bisexual, asexual, or unsure (30.82), $p < .001$	$F(3,251) = 4.85$	$p = .003$	$\eta_p^2 = .055$
		Total variance explained		34.3%

TABLE 3 Correlations, internal consistencies (Cronbach alpha), scale means and *SD*s of all measures for the overall sample, non-clinical subsample, and probable SAD subsample

	Correlations					Overall ($n = 255$) Mean (*SD*)	Non-clinical ($n = 190$) Mean (*SD*)	Probable SAD ($n = 65$) Mean (*SD*)	Probable SAD vs. Non-clinical *t* test (#)
	FPES	BFNE-S	DPSOS	CSRS	α				
FPES	—	—	—	—	.90	26.96(17.67)	22.42(16.17)	40.26(15.01)	$t(253) = 7.82$***
BFNE-S	.50***	—	—	—	.96	20.95(9.35)	18.03(8.21)	29.48(7.01)	$t(253) = 10.06$***
DPSOS	.72***	.70***	—	—	.94	32.82(23.05)	25.46(19.80)	54.34(17.90)	$t(253) = 10.39$***
CSRS	.61***	.57***	.61***	—	.92	27.73(19.18)	22.51(16.83)	42.98(17.50)	$t(253) = 8.38$***
SPS	.54***	.64***	.65***	.52***	.95	16.02(14.95)	8.44(5.98)	38.15(10.65)	$t(78.24) = 21.38$***

Note. ***$p < .001$; # *t* test for DPSOS and SPS performed using transformed data. BFNE-S = Brief Fear of Negative Evaluation Scale—Straightforward; CSRS = Concerns of Social Reprisal Scale; DPSOS = Disqualification of Positive Social Outcomes Scale; FPES = Fear of Positive Evaluation Scale; SPS = Social Phobia Scale.

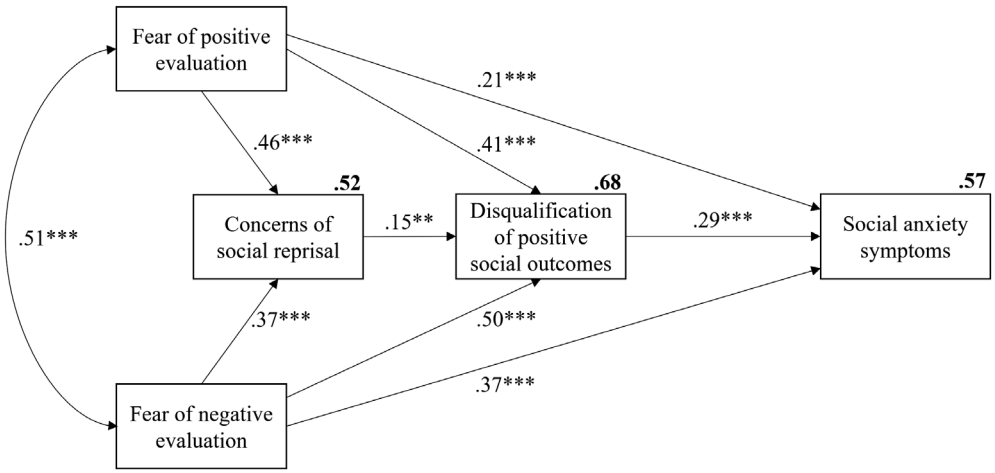

FIGURE 2 SEM of social anxiety with beta weights and squared multiple correlations; ***$p < .001$, **$p = .003$

contribution of BFOE to cognitive distortions and the unique variance contributions of cognitive distortions to social anxiety symptoms. The strongest predictors of social anxiety symptoms were BFNE-S explaining 24.08% (95% CI: 16.08%, 32.38%, $p = .002$), FPES explaining 12.04% (95% CI: 6.25%, 19.36%, $p = .001$), and DPSOS explaining 8.35% (95% CI: 1.93%, 19.71%, $p = .002$) of the variance in social anxiety symptoms (see Table 4 for a summary of effect sizes).

4 | DISCUSSION

The aim of the present study was to confirm a BFOE model of social anxiety symptoms, integrating the findings of Weeks and Howell (2012) into a single model, using SEM. All three hypotheses were supported. DPSOS was confirmed to be a unitary scale measuring a single underlying construct. The structure of social anxiety symptoms was confirmed to be underpinned by a co-occurring fear of positive and negative evaluation (i.e., BFOE), in which unique variance in social anxiety symptoms was also accounted for by cognitive distortions (i.e., CSRS and DPSOS).

The first hypothesis was supported with DPSOS confirmed as a unitary construct using the Fornell and Larcker (1981) test of discrimination. This finding is consistent with Heimberg and Becker (2002) in that disqualifications of positive social outcomes is more general, with individuals

TABLE 4 Effect sizes for path analysis within the structural model

β pathway to SPS	Effect size	95% CI Effect size	% SPS variance explained
FPES			
(FPES>CSRS) × (CSRS>DPSOS) × (DPSOS>SPS)			
.457 × .153 × .289	.020		
(FPES>DPSOS) × (DPSOS>SPS)			
.412 × .289	.112		
(FPES>SPS)			
.208	.208		
Total effect	**.347**	**[.250, .440]**	12.04%
BFNE-S			
(BFNE-S>CSRS) × (CSRS>DPSOS) × (DPSOS>SPS)			
.372 × .153 × .289	.016		
(BFNE-S>DPSOS) × (DPSOS>SPS)			
.404 × .289	.117		
(BFNE-S>SPS)			
.365	.365		
Total effect	**.498**	**[.401, .573]**	24.80%
CSRS			
(CSRS>DPSOS) × (DPSOS>SPS)			
.153 × .289	.044		
Total effect	.044	[.011, .097]	0.19%
DPSOS			
(DPSOS>SPS)			
.289	.289		
Total effect	**.289**	**[.139, .444]**	8.35%

Note. Values in bold denote significant effect ($p < .003$). Effect sizes are considered very small (.01), small (.20), medium (.50), and large (.80) (Cohen, 1988; Sawilowsky, 2009). BFNE-S = Brief Fear of Negative Evaluation Scale—Straightforward; CSRS = Concerns of Social Reprisal Scale; DPSOS = Disqualification of Positive Social Outcomes Scale; FPES = Fear of Positive Evaluation Scale; SPS = Social Phobia Scale.

inappropriately externally attributing positive social outcomes for a variety of reasons.

Based upon the BFOE theory of social anxiety (Weeks & Howell, 2012), the second hypothesis predicted that a positive correlation would be confirmed between fear of positive and negative evaluation in the SEM model. This hypothesis was supported confirming previous results by Weeks et al. (2008) and Weeks and Howell (2012) that fear of positive and negative evaluation are correlated, explaining more variance in social anxiety symptoms when considered simultaneously than separately. Together, these findings support the BFOE theory of social anxiety symptoms where individuals experience fear of positive and negative evaluation as a co-occurring *fear evaluation in general.* Individuals have a deep-seated psychoevolutionary concern for both avoiding exclusion from a group and also avoiding unnecessary conflict from too much competition. Consequently, socially anxious individuals are more likely to remain inconspicuous (Weeks & Howell, 2014) than to seek approval (i.e., positive evaluation) from an audience, as has been suggested in FNE-only conceptualisations (e.g., Rapee & Heimberg, 1997).

The final hypothesis predicted that BFOE would account for unique variance in cognitive distortions (i.e., concerns for social reprisal and disqualification of positive social outcomes), which in turn would account for unique variance in social anxiety symptoms, based upon the findings of Weeks and Howell (2012). This hypothesis was also supported. This result is consistent with the BFOE theory of social anxiety (Weeks & Howell, 2012). Cognitive distortions bias fear of evaluation information in a way that intensifies and perpetuates social anxiety symptoms, expanding the cognitive-behavioural model of SAD (Heimberg et al., 2010; Rapee & Heimberg, 1997). When individuals feel fear regarding social evaluation, it initiates thinking patterns associated with evaluation. If these thinking patterns involve stronger expectations of social reprisal, individuals are more likely to filter out their positive social outcomes, which in turn contribute to social anxiety symptoms beyond the fear of evaluation (Weeks & Howell, 2012, 2014).

An advantage of analysing the fear of negative and positive evaluation relationships simultaneously is that the effect sizes reveal the relative importance of these predictors of social anxiety symptoms. The finding that FNE had the largest effect size is consistent with the literature historically (e.g., Gilbert, 2001; Rapee & Heimberg, 1997; Watson & Friend, 1969) and also with the conceptualisation of SAD in the Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5) (American Psychiatric Association, 2013). The finding that FPE explained variance beyond FNE is consistent with previous multiple regressions (Weeks et al., 2008). Finally, the finding that DPSO explained 8.4% of the variance in social anxiety symptoms has important implications as it is considered a cognitive distortion (Heimberg & Becker, 2002) that is a safety-strategy in part to allay concerns for social reprisal (Weeks & Howell, 2012). Inappropriately attributing positive social successes to external agents such as the compassion of others, the ease of a task, or plain luck (Heimberg & Becker, 2002), ultimately undermines an individual's confidence and exacerbates social anxiety symptoms instead of internal self-attributions of positive social outcomes that would build confidence and weaken social anxiety symptoms. Heimberg and Becker (2002) consider disqualification of positive social outcomes a barrier that is important to address in a social anxiety intervention, which is an assertion supported by the findings of this study.

There are several limitations acknowledged in the present study. The design was cross-sectional. This was an important step in integrating previously fragmented cross-sectional relationships and offering insight to the nature of these relationships. However, without an experimental design, the directionality of these relationships is an

assumption. Kline (2015, 2016) suggests moving from a measurement-of-mediation model whereby an individual difference is measured toward a manipulation-of-mediation where the direction can be validated by time (i.e., the outcome is measured after a manipulation has taken place). Future research could manipulate disqualification of positive social outcomes in an experimental design to validate mediation. The model in this study is also based upon an undergraduate sample with a range of social anxiety symptoms that included symptoms below the clinical threshold for a "probable SAD" diagnosis. As only approximately 26% probably had SAD, the model would benefit from validation in a clinical sample of individuals with SAD. Several demographic variables were found to predict social anxiety, however due to the limited sample size and the aim to test the BFOE model generally, they were not included. Consistent with Weeks and Howell (2012), males were a minority in this study (only 12 males were classified "probable SAD"). Further research into the sex ratio is recommended. Future research with a larger and more representative sample should explore the role of how demographic variables may influence a model of SAD.

Our findings are relevant to cognitive-behaviour therapy in clinical practice. Specifically, this study further clarifies the processes associated with social anxiety symptoms. In their most undistorted form, FPE and FNE can be adaptive and help individuals to develop harmonious and beneficial social relationships (Gilbert, 2001; Trower & Gilbert, 1989). However, in more extreme cases, these feelings can be strong enough to motivate individuals to maladaptively avoid or endure social situations with discomfort. The finding that cognitive distortions further complicate social anxiety offers a new direction for research to further refine and enhance treatment for SAD. Targeting these modifiable distortions and developing a BFOE- and DPSO-based CBT intervention suggests an important new direction for supporting individuals to reduce their social anxiety symptoms.

In conclusion, this study is the first to validate a bivalent model of SAD using SEM to simultaneously confirm the interactions between bivalent psychoevolutionary fears, cognitive distortions, and social anxiety symptoms. Social anxiety symptoms are underpinned by a fear of positive and negative evaluation whereby socially anxious individuals fear evaluation in general. Fears of evaluation can become distorted by thinking patterns that expect greater reprisal from others, which lead to the safety strategy of rejecting positive social outcomes that ultimately exacerbate social anxiety symptoms. Focusing on disqualifications of positive social outcomes is recommended in order to refine and develop effective relief of social anxiety symptoms, in order to improve the lives of individuals suffering with social anxiety.

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