ORIGINAL ARTICLE

Prospective Associations Between Fears of Negative Evaluation, Fears of Positive Evaluation, and Social Anxiety Symptoms in Adolescence

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Abstract

Fear of negative evaluation (FNE) and fear of positive evaluation (FPE) are independently associated with social anxiety symptoms in adolescence, though no study has tested these relations longitudinally. The current study examined longitudinal relations between FNE, FPE, and social anxiety symptoms using a multi-informant design, in addition to testing adolescent gender as a moderator. Adolescents ($N = 113$; $M_{age} = 12.39$; Girls $= 44.2\%$) and parents completed measures of FNE, FPE, and two ratings of social anxiety approximately 6 months apart. FNE and FPE demonstrated significant stability over time, but neither predicted change in the other construct. Adolescent and parent-reported FNE, but not FPE, predicted increased social anxiety symptoms. Adolescent report of social anxiety symptoms predicted increased FPE over time, whereas parent report of social anxiety symptoms predicted increased FNE. Contrary to hypothesis, gender did not moderate any of the pathways in the model. Findings provide the first evidence that FNE may function as a risk factor for increased social anxiety in adolescence.

Prospective Associations Between Fears of Social Evaluation and Social Anxiety Symptoms in Adolescence

Social anxiety is characterized by fears of social interactions (e.g., talking to unfamiliar individuals, attending social events) and/or performance activities (e.g., delivering a speech, taking tests) [1]. The clinical manifestation of social anxiety is one of the most common mental health disorders in adolescence, with early-adolescence (e.g., ages 12–13) representing a key vulnerability period for social anxiety onset [2]. Further, social anxiety symptoms are strongly associated with co-occurring depression, generalized anxiety, substance abuse, and eating disorder symptoms [3–5] and follow a persistent course of symptoms [6]. Thus, identifying risk factors for social anxiety development and maintenance is critical to inform preventive and intervention services to reduce the impact of social anxiety.

Fears of Social Evaluation and Social Anxiety

Fears of negative evaluation (FNE), or concerns of being criticized, rejected, and embarrassed, have long been recognized as a core cognitive bias in social anxiety [7]. Indeed, FNE is a key diagnostic criteria for the DSM-5 diagnosis of social anxiety disorder [1] and empirical literature supports the link between FNE and social anxiety. For instance, youth with elevated social anxiety symptoms or social anxiety disorder experience dysfunctional social cognitions [8], such as negative interpretations of ambiguous social situations [9–11] or greater evaluation-related fears [12]. Self-reported ratings on FNE scales have been found to differentiate adolescents with and without subthreshold or clinical levels of social anxiety [13–15]. Collectively, these studies suggest that FNE is a hallmark cognitive feature of social anxiety in adolescence.

In addition to FNE, recent research indicates that youth with social anxiety fear any type of social evaluation.

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Fears of *positive* evaluation (FPE), or discomfort with receiving favorable public attention, was first referenced in a study by Wallace and Alden who found that individuals with social anxiety experienced elevated anxiety when receiving positive evaluation [16]. Explanations for FPE indicate that experiences of positive evaluation engender direct social comparison with others and may elevate others' expectations for, and scrutiny of, future behavior [17]. Although primarily conducted in adults, studies have found adolescent ratings of FPE to be distinct from FNE [18], uniquely associated with increased social anxiety symptoms above and beyond FNE [13, 18] or depressive symptoms [19], and higher among adolescents meeting clinical cut-offs on measures of social anxiety [13]. Further, adolescents reporting high levels of both FNE and FPE are rated by parents as experiencing more social anxiety, depression, and general psychosocial impairment compared to adolescents low in both FNE and FPE or high in only one fear domain [20].

Despite these studies, two related questions remain unanswered in the literature. First, how are FNE and FPE related to one another over time? Initial research suggested that FPE, although a distinct construct from FNE, may be a result of delayed FNE (e.g., concerns with being praised due to anticipated negative evaluation from others; [21]). In the first test of this with adults, Rodebaugh et al. [31] assessed FNE and FPE weekly over a 3-week time period and found self-reported FNE and FPE to be moderately correlated concurrently but found no evidence that either fear domain prospectively predicted the other. Using a similar design of weekly assessments across 12 weeks and in a clinical sample of adults diagnosed with social anxiety disorder participating in a treatment study, Johnson et al. [24] found a small yet significant reciprocal cross-lagged relationship between FNE and FPE. However, the absence of longitudinal studies on FNE and FPE in adolescence precludes knowing whether similar temporal relations exist. Further, weekly assessments may not be sufficient time to observe change in FNE or FPE. The current study aims to build upon these two studies to test the reciprocal relationship of FNE and FPE in a community sample of adolescents over a 6 month time period.

The second, and perhaps more important, unanswered question is: Are FNE and FPE actual risk factors for social anxiety development in adolescence, merely concomitant features of social anxiety, or perhaps even consequences of social anxiety [22]? Research to date indicates that both FNE and FPE are independently associated with social anxiety symptoms in adolescence [13, 18–20]. But again, evidence comes from cross-sectional studies. Cognitive behavioral models theorize that cognitive biases like fears of social evaluation may precede, and contribute to, the development of social anxiety pathology [42]. Consistent with scarring models [23], however, the possibility also exists that

increased social anxiety symptoms, such as avoidance of social/performance situations, may provide negative reinforcement for FNE or FPE, thereby resulting in exacerbated FNE or FPE.

The two adult studies mentioned above are the only studies to evaluate the longitudinal relationship of FNE, FPE, and social anxiety symptoms. Rodebaugh et al. [31] found that self-reported FNE, FPE, and social interaction anxiety symptoms were unrelated over a 3-week time period assessment in a community sample of college students. Conversely, Johnson et al. found that FNE, but not FPE, directly predicted increased social interaction anxiety symptom severity 3 months later [24]. Further, social interaction anxiety also predicted increased FNE but not FPE. Although tentative, findings suggest that FNE and social anxiety may demonstrate a reciprocal relationship.

Current Study

The current study examined the associations of FNE, FPE, and social anxiety over a 6th-month time period in a community sample of adolescents using a multi-informant design consisting of adolescent and parent ratings. A non-clinical sample of early adolescents was targeted as this period consists of normative rises in internalizing symptoms and social concerns [4, 15] and that sub-clinical levels of symptoms are linked to elevated impairment [6]. Adolescent and parent report were utilized in the current study given that a multi-informant design is considered "best practice" for assessing social anxiety and related concern in adolescence [20, 25]. Specifically, adolescents and parents demonstrate low correspondence across assessments of social evaluative concerns and social anxiety [20], due to these experiences being "internal" to the adolescent and expressed across settings [25]. Additionally, given that the social anxiety construct is typically composed of a range of affective, cognitive, and behavioral features related to social interaction-based and performance-based anxiety [26, 27], we assessed social anxiety via two distinct, but well-validated, self-report measures of social anxiety: the social phobia subscale of the Revised Child Anxiety and Depression Scale (RCADS) [28] and Social Phobia Inventory (SPIN) [29, 30]. Finally, given evidence that rates of FNE and social anxiety symptoms are higher in girls compared to boys [15], we tested adolescent gender as a moderator.

The current study had three primary objectives:

(1) The first aim of the current study was to test the longitudinal relation of FNE and FPE. Although concurrent evidence indicates that FNE and FPE are separate constructs in adolescents [22], these fears are moderately interrelated in adolescent samples [18] and may have a reciprocal prospective association when assessed in

adults [24]. Thus, we anticipated that FNE and FPE would be reciprocally related.

(2) The second aim was to evaluate the reciprocal relation of FNE, FPE, and social anxiety symptoms over a 6th-month time period. Although the two available longitudinal studies reported mixed evidence [24, 31], we expected FNE to be associated with increased social anxiety symptoms, and vice versa, following the one study reporting a reciprocal association between FNE and social anxiety symptoms in adults over a 3-month time period [24]. Conversely, given the lack of evidence supporting a reciprocal relation between FPE and social anxiety when assessed longitudinally [24, 31], we did not expect FPE to predict increased social anxiety, and vice versa, social anxiety to predict increased FPE. Based on the limited number of available studies, we did not make specific hypotheses regarding the different measurements of social anxiety.

(3) Given research showing that girls self-report higher social-evaluative concerns and social anxiety symptoms [15, 32], we tested whether the relation of FPE, FNE, and social anxiety would differ between girls and boys. We hypothesized that the reciprocal relationship between FNE and FPE with social anxiety would be stronger for girls compared to boys.

Methods

Participants

Adolescents were recruited for an ongoing longitudinal study focused on understanding parenting behaviors in relation to adolescents' emotional and social functioning (see Fredrick & Luebbe, [40] for further description). At the first time point (T1), adolescents in 6th-9th grade and their primary caregiver (termed "parent" throughout) were recruited through community settings, local middle schools, and online forums (e.g., Facebook groups) in the Summer and Fall of 2019. One hundred thirteen adolescents ($M_{age} = 12.39$, $SD = 0.96$, Girls = 44.2%) and their parent ($M_{age} = 43.74$, 30–62 years, $SD = 5.40$, Biological mother = 88%%; biological father = 5.3%; other (e.g., adoptive mother, grandmother, stepparent) = 6.7%) participated at T1. Parents identified adolescents' race/ethnicity as European-American/White (82.3%), Biracial/Mixed Race (11.5%), Black/African-American (4.4%), and Asian (1.8%). Six months after participating in T1, families were contacted for their participation in a follow-up study consisting of survey questions administered via Qualtrics online. Out of the original 113 families, 98 families completed Time 2 (T2) survey measures (86.73% retention rate; patterns of missingness discussed below). Of note, T1 data collection occurred between July 2019 to February 2020 and T2 data collection occurred between December 2019 and July 2020, during the beginning of the Covid-19 pandemic.

Procedure

The Institutional Review Board granted approval for the study. Parents provided written consent and adolescents provided written assent to participate in both study timepoints at T1. Families completed the T1 study in their home, a public library, or a laboratory setting. Approximately 6 months after completion of T1, adolescents and parents were sent an electronic Qualtrics survey link via e-mail consisting of 10–15 min of survey questions (and were then compensated for their time).

Measures

Fear of Negative Evaluation

The eight-item Brief Fear of Negative Evaluation Scale (BFNE-S) [33] evaluated adolescents' ratings of FNE ("I am afraid that others will not approve of me") on a 5-point scale from 0 (*not at all characteristic of me*) to 4 (*entirely characteristic of me*). The BFNE-S has acceptable factor structure, internal consistency estimates, and strong concurrent bivariate correlations with social anxiety symptoms [13, 18]. Internal consistency for adolescent and parent-report on the BFNE-S at T1 was $\alpha = 0.92$ and $\alpha = 0.93$ and $\alpha = 0.94$ and $\alpha = 0.95$ at T2, respectively.

Fear of Positive Evaluation

The 10-item Fear of Positive Evaluation Scale (FPES) [17] was used to assess adolescents' self-reported FPE (*not at all true*) to 9 (*very true*). The FPE measures fear/anxiety to a variety of positive evaluations ("I feel uneasy when I receive praise from authority figures"). Similar to previous research, the current study excluded one item referring to clothing preferences (due to potential developmental differences) [19] and the two-reverse scored items which are only included to detect response biases [17], resulting in the 7-item FPES. The FPES has acceptable factor structure, internal consistency, and convergent validity with social anxiety symptoms [13, 18]. Internal consistency for adolescent and parent-report on the FPES at T1 was $\alpha = 0.83$ and $\alpha = 0.89$ and $\alpha = 0.81$ and $\alpha = 0.91$ at T2, respectively.

Social Anxiety Symptoms

Two measures were used to assess adolescents' self-reported social anxiety symptoms. First, the nine-item social phobia subscale on the Revised Child Anxiety and Depression

Scale (RCADS) [28] was used to measure social anxiety (0 = *never*, 3 = *always*). The majority of items assess anxiety and fears of social situations ("I worry what other people think of me"). The RCADS subscales has acceptable internal consistency, factor structure from other RCADS subdomains, test–retest reliability, and convergent validity with measures of internalizing symptoms [28, 34–36]. A mean item score was calculated, with higher scores indicating greater social anxiety. Internal consistency for adolescent and parent-report at T1 was α = 0.85 and α = 0.87 and α = 0.90 and α = 0.90 at T2, respectively. Rates of elevated social anxiety were 6.2% and 2.7% according to adolescent and parent report, respectively.

Next, adolescents' social anxiety symptoms were assessed with the 17-item Social Phobia Inventory (SPIN) [30]. The SPIN measures fear, avoidant behaviors, and physiological reactions to social and performance situations ("Parties and social events scare me") [37] (0 = *not at all*, 4 = *extremely*), with higher scores representing greater social anxiety symptoms. The SPIN has demonstrated strong convergent validity with other measures of social anxiety, discriminative validity with other anxiety disorders, and test–retest reliability [29, 37]. Internal consistency of scores on the SPIN for adolescent and parent-report at T1 was α = 0.87 and α = 0.89 and α = 0.91 and α = 0.92 for T2.

Data Analysis

There was a small amount of participant attrition (13.3% for adolescents; 9.7% for parents; within dyads there no were cases in which the adolescent completed T2, but the parent did not). Little's MCAR test indicated that data were missing in a pattern consistent with missing completely at random (Little's MCAR test: $\chi^2(47) = 45.13$, $p = 0.55$). That said, attrition was associated with family income. Adolescents (Mann–Whitney $U = 391.00$, $p = 0.002$) and parents (Mann–Whitney $U = 289.00$, $p = 0.007$) completing both timepoints had significantly higher family income than those who did not, respectively. Family income was used as an auxiliary variable for missing data estimation moving forward.

Preliminary analyses were conducted in SPSS and primary analyses were conducted in Mplus v 7.4 [38] using maximum likelihood as the estimator. Given low correlations across reporters, separate adolescent and parent models were estimated. All main-effects models were just identified. Missing data for primary analyses were accommodated using Full-Information Maximum Likelihood with family income included as an auxiliary variable. Moderation was tested using a multiple-group approach. Given that main effects models were just-identified (i.e., DF = 0), we used age as a covariate in models and constrained one non-significant path across gender in order to obtain fit statistics. Then, model fit was

compared for models with all parameters freely estimated among boys and girls to a model in which parameters were constrained across gender. Chi-square difference tests were used to assess if the constrained model fit significantly worse than the free model, indicating moderation. This omnibus approach, if it indicated moderation, was followed-up by systematically testing each parameter across groups to identify specific paths that differed by gender. Generally, model fit was assessed with multiple indices, with the following indicating acceptable fit: comparative fit index (CFI) > 0.95 and root mean square error of approximation (RMSEA) < 0.08 [39].

Results

Preliminary Analysis

All data were normally distributed (skew < |2|, kurtosis < |4|). Means, standard deviations, and intercorrelations among variables are presented in Table 1. Whether participants completed measures before or after the beginning of Covid-19-related local shutdowns was not related to T2 variables. Similarly, of those who completed measures post-shutdown, there were no relations between length since shutdown and T2 variables. As such, these variables were not considered further. Only one demographic item was related to T2 variables. Specifically, girls reported higher levels of T2 FNE. Given this relation, we conducted primary aims investigating gender identity as a covariate in the adolescent-report models.

Among primary variables, there were significant intercorrelations within time point within reporter (see Table 1). Specifically, higher levels of both FNE and FPE were associated with higher levels of social anxiety symptoms. Further, T1 variables were each significantly related to T2 variables. Agreement between adolescent- and parent-report of the same variable at each timepoint, albeit significant, was modest at best (*r*s ranged from 0.26 to 0.40). As such, models testing primary aims were calculated separately for adolescent and for parents.

Primary Analyses

Aim one was to test if T1 and T2 values of FPE and FNE were associated. Patterns of results were identical for the model based on adolescent and parent report, with each finding significant stability pathways. In contrast, there were no cross-construct predictions. For instance, T1 FPE did not predict change in FNE over time, and vice versa. Results did not change when controlling for gender in the adolescent-report model (and gender was no longer related to T2 FNE). As such, we present the more parsimonious main effects models in Fig. 1, with the adolescent-report model (Top Panel) and parent-report model (Bottom Panel).

Table 1 Correlations, means, standard deviations, and ranges for demographic and primary study variables across two time points (N = 113)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. T2 covid shutdown	–																					
2. T2 covid duration	0.71**	–																				
3. Adol. age	-0.25*	-0.21*	–																			
4. Adol. race	0.22*	0.23*	-0.07	–																		
5. Adol. gender	-0.12	-0.18	0.10	0.10	–																	
6. Income	-0.18	-0.10	-0.09	-0.22*	-0.01	–																
Adolescent report																						
7. T1 FPE	0.14	0.01	-0.05	-0.11	0.22*	-0.14	–															
8. T1 FNE	0.02	0.04	0.09	-0.11	0.25**	0.04	0.41**	–														
9. T1 SPIN	0.18	0.16	0.03	-0.13	0.23*	-0.05	0.70**	0.66**	–													
10. T1SAD	0.03	0.10	0.20*	-0.14	0.26**	0.02	0.51**	0.74**	0.76**	–												
11. T2 FPE	0.12	0.00	0.04	-0.04	0.15	-0.03	0.51**	0.21*	0.47**	0.39**	–											
12. T2 FNE	0.05	0.03	0.15	-0.11	0.24*	0.11	0.34**	0.63**	0.48**	0.53**	0.48**	–										
13. T2 SPIN	0.12	0.09	0.09	-0.07	0.13	0.04	0.39**	0.40**	0.61**	0.53**	0.63**	0.68**	–									
14. T2 SAD	0.06	0.04	0.18	-0.14	0.20	0.03	0.23*	0.58**	0.42**	0.51**	0.34**	0.83**	0.66**	–								
Parent report																						
15. T1 FPE	0.02	-0.02	0.01	0.04	0.19*	-0.01	0.26**	0.19	0.20*	0.17	0.33**	0.22*	0.20*	0.18	–							
16. T1 FNE	0.12	0.05	-0.06	-0.02	0.15	0.06	0.11	0.31**	0.24*	0.22*	0.11	0.29**	0.23*	0.28**	0.43**	–						
17. T1 SPIN	0.16	0.09	-0.05	0.04	0.18	-0.12	0.26**	0.30**	0.37**	0.37**	0.29**	0.34**	0.39**	0.30**	0.58**	0.61**	–					
18. T1 SAD	0.11	0.05	0.07	-0.01	0.23*	0.18	0.10	0.27**	0.29**	0.34**	0.21*	0.26**	0.30**	0.24*	0.52**	0.66**	0.71**	–				
19. T2 FPE	-0.07	-0.12	0.07	-0.12	0.03	0.06	0.15	0.26**	0.22*	0.26**	0.28**	0.34**	0.29**	0.23*	0.57**	0.33**	0.43**	0.39**	–			
20. T2 FNE	0.17	0.02	0.00	-0.13	0.14	0.10	0.17	0.34**	0.31**	0.29**	0.22*	0.39**	0.33**	0.34**	0.32**	0.73**	0.51**	0.65**	0.52**	–		
21. T2 SPIN	0.16	0.05	-0.06	0.01	0.02	-0.06	0.10	0.17	0.23*	0.22*	0.30**	0.27**	0.40**	0.24*	0.39**	0.48**	0.65**	0.55**	0.55**	0.71**	–	
22. T2 SAD	0.11	0.03	0.04	-0.10	0.12	0.10	0.09	0.30**	0.30**	0.30**	0.27**	0.35**	0.34**	0.32**	0.39**	0.66**	0.59**	0.75**	0.54**	0.83**	0.73**	–
M	0.71	52.50[a]	12.39	0.18	0.44	5.91	2.60	1.66	1.20	1.21	2.35	1.52	1.13	1.13	2.13	1.19	0.94	1.01	2.87	1.20	0.96	0.97
SD	–	–	0.96	–	–	–	1.68	1.00	0.63	0.57	1.60	1.03	0.69	0.67								
Range	0–1	0–158	11–14	0–1	0–1	1–8	0.00–6.43	0.00–4.00	0.12–3.24	0.00–2.67	0.00–6.29	0.00–4.00	0.00–2.76	0.00–2.78								

Table 1 (continued)

Parent report	15	16	17	18	19	20	21	22
SD	1.52	0.89	0.56	0.48	1.85	0.89	0.62	0.52
Range	0.00–7.14	0.00–3.38	0.00–2.65	0.11–2.44	0.00–8.29	0.00–3.50	0.00–2.76	0.00–2.67

Correlations are pooled estimates based on multiple-imputed datafiles (n=40 imputations) with the exception of correlations for covid variables which were not imputed (n=98 for those two variables). Means, standard deviations and ranges based on available data (n=113 for T1 values; n=98 for T2 child values; n=102 for T2 parent values). T1=Time 1. T2=Time 2. Adol.=adolescent. For T2 Covid Shutdown, 0=T2 data collection before state stay-at-home order, 1=T2 data collection after state stay-at-home order. For T2 Covid duration, participants who completed time 2 data collection before state stay-at-home order are coded as 0. For race, 0=nonwhite, 1=white. For gender identity, 0=boy, 1=girl. Income was an ordinal variable with bins of width $20 K starting from $0 K and ending with a final bin of $140 K+

FPE fear of positive evaluation; *FNE* fear of negative evaluation; *SPIN* social phobia inventory; *SAD* social anxiety disorder subscale

*p<.05. **p<.01

[a] Given distribution, median days are presented
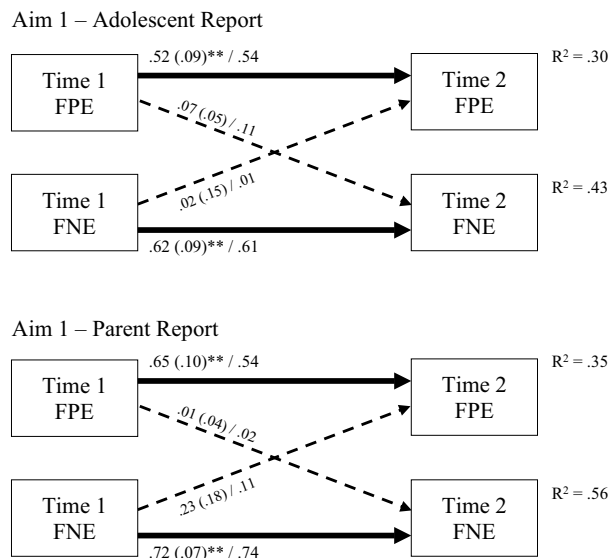
Fig. 1 Longitudinal relations among adolescent-reported (top panel) and parent-reported (bottom panel) fears of negative and positive evaluation. Top panel depicts adolescent-report model and bottom panel depicts parent-report model. Both models were just-identified. For all significant parameters, the following values are shown: unstandardized estimate (standard error)/standardized estimate. Dashed lines indicate non-significant paths. Covariances between Time 1 predictors not shown for ease of presentation. *FPE* fear of positive evaluation; *FNE* fear of negative evaluation. **p<.05. **p<.01*

Interaction terms, calculated as the cross-product of T1 FNE with dummy-coded gender and T1 FPE with gender, were included in the model (along with the main effect of gender) to test if gender identity moderated relations in path analyses predicting T2 fears of social evaluation outcomes. No significant interactions emerged in either reporter's model.

Aim two was to test whether fears of social evaluation predicted changes in social anxiety symptoms over time or vice versa. For each reporter, two path analyses were conducted, with each using one of the two measures of social anxiety symptoms (see Fig. 2). Again, path models were just-identified, yielding perfect indices of fit. Results differed based on reporter.

Adolescent-Report Models

In addition to strong stability across time for FNE and FPE, there was also strong stability in social anxiety symptoms irrespective of which social anxiety measure was used. Across both models, the only cross-lag effect observed in the adolescent-reported models was a significant, positive relation between T1 social anxiety symptoms predicting T2 FPE over and above the effects of T1 FPE and FNE. T1 FNE also predicted increased
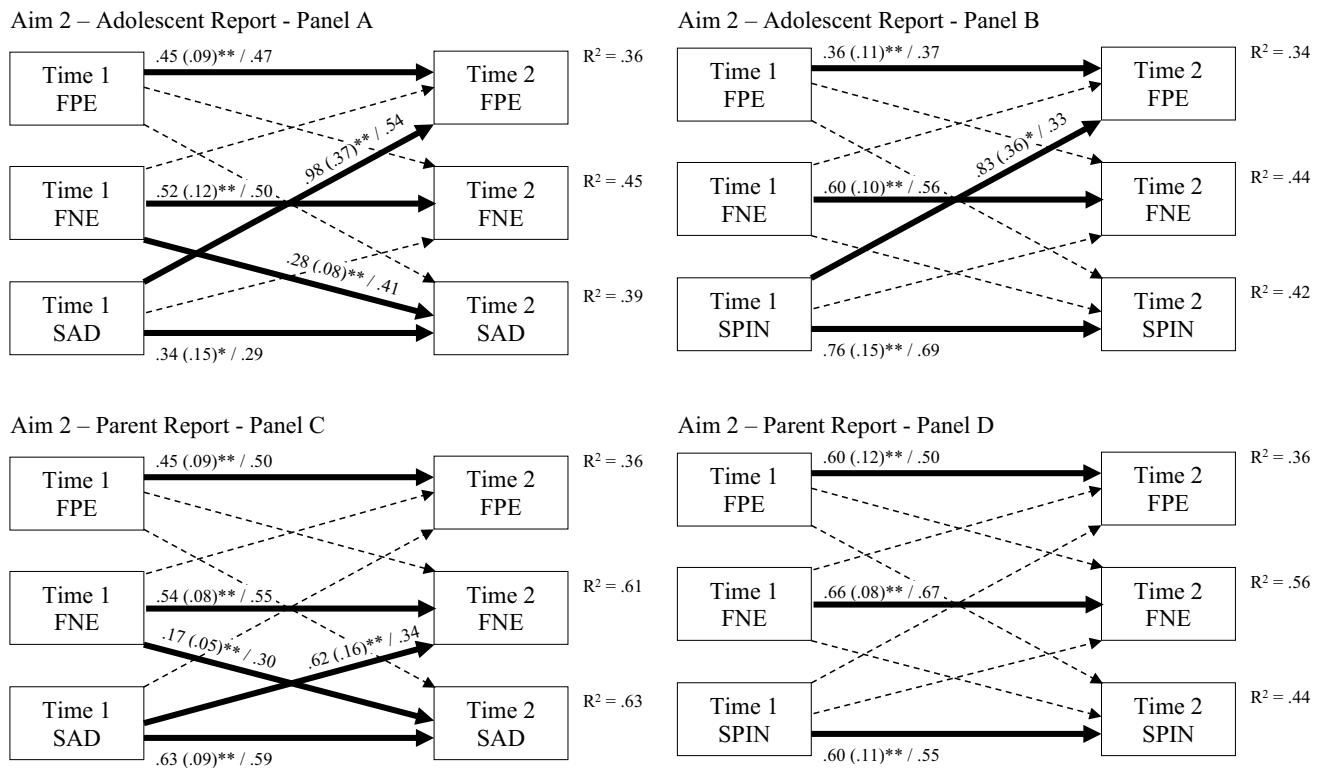
Fig. 2 Longitudinal relations among adolescent-reported (top panel) and parent-reported (bottom panel) fears of negative and positive evaluation and social anxiety. Top panels depict adolescent-reported models and bottom panels depict parent-reported models. All models were just-identified. For all significant parameters, the following values are shown: unstandardized estimate (standard error)/standardized estimate. Dashed lines indicate non-significant paths, and for ease of presentation, non-significant path coefficients not shown. Similarly, covariances between Time 1 predictors not shown. *FPE* fear of positive evaluation. *FNE* fear of negative evaluation. *SAD* social anxiety disorder symptoms from Revised Child Anxiety and Depression Scale. *SPIN* social phobia inventory. *$p < .05$. **$p < .01$

social anxiety over time, but only in the model in which the RCADS social anxiety subscale was used (Fig. 2, top panel A). This same path was non-significant in the model with the SPIN (Fig. 2, top panel B).

Given the increased complexity of these models compared to Aim 1, a multiple-group approach to moderation was used (see the data analysis section above for full description of this approach). Moderation analyses indicated no significant differences in magnitude of paths based on participant gender identity. Specifically, for the model that used the RCADS, the model in which paths were constrained to be equal across gender identities ($\chi^2(10) = 17.49$, $p = 0.064$, RMSEA = 0.12, CFI = 0.97) did not fit significantly worse than the freely-estimated model ($\chi^2(1) = 1.27$, $p = 0.259$, RMSEA = 0.07, CFI = 1.00; $\Delta\chi^2(9) = 16.21$, $p = 0.063$). A similar result emerged for the model that used the SPIN. The constrained model ($\chi^2(10) = 10.86$, $p = 0.369$, RMSEA = 0.04, CFI = 1.00) did not fit worse than the

free model ($\chi^2(1) = 0.20$, $p = 0.656$, RMSEA = 0.00, CFI = 1.00; $\Delta\chi^2(9) = 10.66$, $p = 0.300$).

Parent-Report Models

Similar to adolescent-report models, there was strong stability across time for FNE, FPE, and each of the measures of social anxiety symptoms. Cross-lagged results differed based on the measure of social anxiety symptoms used. Using the RCADS, and similar to the adolescent-reported model, T1 FNE predicted increased social anxiety symptoms over time (In the parent-report model using the SPIN, this effect approached significance: $b = 0.12$, $SE = 0.06$, $p = 0.066$, $\beta = 0.17$). A unique effect emerged, such that parent-reported T1 RCADS social anxiety symptoms predicted increased FNE. For the model using the SPIN, there were no significant cross-lagged paths. See Fig. 2, bottom panel C for the RCADS model and bottom panel D for the SPIN model.

As with adolescent-reported models, no gender moderation was found in the parent-reported models. Specifically, the RCADS model in which paths were constrained to be equal across gender identities ($\chi^2(10) = 8.43$, $p = 0.587$, RMSEA = 0.00, CFI = 1.00) did not fit significantly worse than the freely-estimated model ($\chi^2(1) = 0.04$, $p = 0.842$, RMSEA = 0.00, CFI = 1.00; $\Delta\chi^2(9) = 8.39$, $p = 0.496$). A similar result emerged for the model that used the SPIN. The constrained model ($\chi^2(10) = 14.34$, $p = 0.158$, RMSEA = 0.09, CFI = 0.98) did not fit worse than the free model ($\chi^2(1) = 0.05$, $p = 0.829$, RMSEA = 0.00, CFI = 1.00; $\Delta\chi^2(9) = 14.09$, $p = 0.11$).

Discussion

The current study is the first to examine the longitudinal relation of fears of negative evaluation (FNE), fears of positive evaluation (FPE), and social anxiety symptoms using a multi-informant design over a 6th-month time period in a community sample of adolescents. Adolescent and parent-reported FNE and FPE were moderately stable across both timepoints, though each fear domain did not predict increases in the other domain. According to both adolescent and parent report, FNE, but not FPE, predicted increased social anxiety symptom severity over time as measured by the RCADS (with effects trending towards significant for the SPIN). According to adolescents, ratings on each measure of social anxiety predicted increased ratings of FPE, whereas parent ratings on the RCADS predicted increased FNE. Finally, there was no evidence for adolescents' gender identity moderating relations of FNE, FPE, and social anxiety.

Reciprocal Relations of FNE and FPE

Findings showed that FNE and FPE were moderately correlated 6 months apart and relatively stable, though neither predicted change in the other fear domain. These findings are consistent with one study of undergraduate students observing FNE and FPE to be correlated at weekly assessments, but neither predicting increases in the other. Yet, another study comprising a clinical sample of adults with social anxiety disorder found a small cross-lagged relationship between FNE and FPE 3 months apart [24]. Our findings are the first to suggest that FNE and FPE are concurrently associated but neither predicts the other fear domain among adolescents. There are at least three possible reasons why we did not find a prospective relation between FNE and FPE: (a) the high stability of FNE and FPE precluded ability to predict change, (b) prospective effects might be stronger if evaluated in a clinical sample of adolescents [24], or (c) these constructs simply co-occur rather than cause each other. Although we

cannot rule out the clinical- versus community-sample issue, our stability coefficients were generally moderate (i.e., T1 social fear variables predicted about 25–35% of variance in the equivalent T2 variable), lending support to the hypothesis that FNE and FPE are simply co-occurring phenomena in adolescence [40].

Reciprocal Relations of FNE, FPE, and Social Anxiety Symptoms

According to both adolescent and parents, FNE predicted increased social anxiety symptoms 6 months later as assessed by the RCADS, with effects in the parent model trending toward significant for the SPIN. Conversely, FPE was unrelated to future social anxiety symptoms regardless of the measure or informant. Overall, these findings align with a prior study of adults participating in social anxiety treatment showing FNE, but not FPE, to predict increased social anxiety symptoms [24]. Findings from the current study indicate that FNE might also represent a *risk factor for*, rather than a sole *concomitant feature of*, social anxiety symptoms in adolescents [3]. Potentially, adolescents with elevated concerns of negative evaluation experience increased anxious reactions and avoidant behavior surrounding interpersonal and performance-based interactions, further maintaining and increasing symptoms of social anxiety.

Although a thorough review of these measures is outside the scope of the current study, we briefly acknowledge a possible reason for why FNE predicted increased social anxiety symptoms when assessed with the RCADS but not the SPIN (though effects were marginal for parent-report of the SPIN). When considering item-level differences between measures, the RCADS appears more limited in the type of social fears asked; for instance 6 of 9 items on the RCADS measure anxiety or worries of social interactions [41], whereas the SPIN comprises numerous affective reactions, cognitions, and behavioral responses to both social-interaction and performance-based situations [29]. Thus, FNE might represent a risk factor for the social-interaction component of social anxiety more than the performance-based component. Nevertheless, replication of these findings is needed to better understand if and how FNE functions as a risk factor for social anxiety symptom severity.

Neither adolescent nor parent ratings of FPE predicted increased social anxiety symptoms. These findings are consistent with findings from the two adult studies that tested the prospective relations of FPE to later social anxiety [24, 31]. In fact, our findings indicated that adolescent ratings of social anxiety predicted increased FPE. Thus, FPE may function as a feature and *consequence* of social anxiety, rather than a risk factor. Consistent with scarring models [23], adolescents experiencing socially avoidant behaviors that accompany social anxiety may develop sensitivities to

social situations with opportunities for positive evaluations. Or, elevated social anxiety might contribute interpretation biases of positive social situations, further increasing fears of positive evaluations [21]. Regarding informant differences, the direct association of social anxiety to FPE for adolescent, but not parent report, might be attributable to adolescents developing sensitivities to positive evaluation in school or in peer interactions, consistent with the low correspondence of adolescent and parent ratings of FPE [19, 20]. Further, adolescents' ratings of social anxiety may directly impact FPE given that social withdrawal and submissive behaviors appear to be particularly associated with FPE [21]. Relatedly, given that social anxiety predicted FNE for the parent model only, parents may observe behaviors indicative of adolescent FNE in the home setting (e.g., expressing anxiety and fear with being negatively evaluated when preparing for school presentations or assignments). Taken together, although there were moderate within timepoint correlations among FNE, FPE, and social anxiety, according to adolescents' perceptions, the temporal relations of FNE and FPE with social anxiety differ between the two fear domains.

Although caution should be made given the small standardized effect, one additional findings consistent with a "scarring" model of psychopathology was parent ratings of social anxiety being associated with increased FNE. Nonetheless, this finding is consistent with Johnson et al.'s [24] study with adults, and in concert with the findings for the other direction of effect (i.e., FNE predicting increased social anxiety), suggests the potential for a downward spiral whereby FNE begets worsened social anxiety symptoms which then exacerbates FNE further. Considering all findings together, the fact that different effects emerged based on the reporter assessed suggests that the multi-informant assessment of FNE and FPE across adolescence warrants further attention.

No Evidence for Gender as Moderator

Given evidence of increased social anxiety and social fears in adolescent girls [15, 18, 32], we tested gender as a moderator. Although adolescents identifying as girls self-reported higher FNE, FPE, and social anxiety symptoms at T1, and higher FPE and social anxiety at T2, there was no evidence for gender moderating pathways in the model. Thus, despite mean differences in girls reported higher social anxiety and fears of social evaluation, the relationship among FNE, FPE, and social anxiety is similar across adolescents identifying as girls and boys.

Limitations & Future Directions

Despite this study being the first to unravel the longitudinal relations among FNE, FPE, and social anxiety in adolescence, a few limitations are worth noting. First, our community sample was fairly homogenous with respect to being predominately White and residing in families with middle or upper income levels. Although our retention rate was fairly high (87%), results found that adolescents from higher family income levels were more likely to participate in the T2 follow-up, which undermines generalizability of our findings. As research suggests that cultural values related to interpersonal behavior and self-construal likely impact the manifestation of social anxiety [42], extending these findings to racially and economically diverse groups would augment our conceptualization of FNE, FPE, and social anxiety. Second, our sample size was relatively small and included a community-based sample of adolescents, though rates of adolescents meeting criteria for elevations on the RCADS based on self-report was fairly consistent with lifetime prevalence estimates of social anxiety disorder for youth ages 13–14 (7.7%) [4] anxiety. Third, although our findings did not suggest that levels of FNE, FPE, or social anxiety were correlated with timing of data collection with respect to the Covid-19 pandemic, collecting longitudinal data during this unique psychosocial stressor likely limits generalizing to how these fears and symptoms are prospectively related. As youth with social anxiety may be particularly impacted, for better or for worse, by the lockdowns and physical distancing associated with Covid-19 [43], examining the temporal course of FNE, FPE, and social anxiety with larger time throughout and after Covid-19 restrictions are reduced will contribute to our understanding of the developmental course of these fears and symptoms. Finally, our study was unable to determine whether the increased association between FNE with social anxiety symptoms predicted meaningful levels of impairment (e.g., social withdrawal, co-occurring internalizing symptoms). Similarly, an important future direction will be determining whether FPE, as a result of elevated social anxiety, prospectively predicts symptomatology or domains of impairment, such as depression [41, 44].

Summary

Taken together, findings indicate that FNE and FPE are distinct and relatively stable constructs when assessed over a 6th month time frame in a community sample of adolescents. Further, adolescent and parent-reported FNE, but not FPE, predicted increased social anxiety symptom severity over time as measured by the RCADS. According to adolescents, ratings on each measure of social anxiety predicted increased ratings of FPE, whereas parent-reported social anxiety predicted increased FNE. These findings are the first to unravel the temporal relation of FNE, FPE, and social anxiety in adolescence, and suggest that FNE may be a risk factor for social anxiety severity. Future research

testing fears of social evaluation and social anxiety across longer time frames across adolescence are important next steps to enhance our understanding of the developmental nature and correlates of social anxiety.

Declarations

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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