Multi-Informant Assessments of Adolescents' Fears of Negative and Positive Evaluation: Criterion and Incremental Validity in Relation to Observed Behavior

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Abstract

Adolescents who experience social anxiety often display distressing fears that unfamiliar individuals evaluate their performance in social settings. These fears typically manifest as fears of negative evaluation (FNE) and/or fears of positive evaluation (FPE). Two well-established survey measures were originally developed to assess these evaluative fears in adults (Brief Fear of Negative Evaluation Scale [BFNE]; Fear of Positive Evaluation Scale [FPES]), and recent work supports their psychometric properties when administered to adolescents and their parents. Yet, do these reports relate to how adolescents behave within anxiety-provoking social interactions germane to their clinical presentations, namely their interactions with unfamiliar peers? We tested this question in a mixed clinical/community sample of 105 adolescents and their parents. Both adolescents and parents completed reports about adolescents' fears on the BFNE and FPES. Further, trained independent observers rated adolescents' social anxiety and social skills during the Unfamiliar Peer Paradigm, a set of tasks designed to estimate how adolescents react to social interactions with unfamiliar peers. At the bivariate level, adolescents' BFNE and FPES reports related to observed social anxiety and social skills, whereas parents' FPES reports related to observed social anxiety. Further, both informants' FPES reports demonstrated incremental validity in relation to observed social anxiety, relative to the other informant. Compared to their BFNE reports, adolescents' FPES reports displayed incremental validity in relation to observed social skills; the reverse was not true for adolescents' BFNE reports. These findings have important implications for screening and treatment planning assessments when delivering services to adolescents experiencing social anxiety.

Keywords: adolescence, behavioral assessment, fear of negative evaluation, fear of positive evaluation, social anxiety, social skills

Multi-Informant Assessments of Adolescents' Fears of Negative and Positive Evaluation: Criterion and Incremental Validity in Relation to Observed Behavior

Social anxiety disorder (SAD) is defined by an intense and distressing fear and avoidance of social situations with unfamiliar individuals, particularly those situations that provide the perceived opportunity to be scrutinized (American Psychiatric Association [APA], 2013). SAD is one of the most prevalent disorders among adolescents (Kashdan & Herbert, 2001), and the 12-month prevalence rate of social anxiety among adolescents is comparable to rates seen among adults (Kessler et al., 2012; Ruscio et al., 2008). In fact, SAD's median age of onset is approximately 13 years and the prevalence of this disorder increases considerably during adolescence (Bandelow & Michaelis, 2015; Kessler et al., 2005). Unfamiliarity and uncertainty are key components of social anxiety as experienced by adolescents, particularly within interactions with unfamiliar peers (Cannon et al., 2020; Glenn et al., 2019; Hofmann et al., 1999). Indeed, novel social environments—such as the formation of romantic attachments and development of close peer bonds—involve contact with unfamiliar peers and harbor uncertain social outcomes (Caouette & Guyer, 2014). Thus, a key aim of research on evidence-based assessments for social anxiety concerns should involve assessing how these concerns manifest among adolescents, and particularly in interactions with unfamiliar peers.

A core feature of social anxiety involves displaying maladaptive cognitions about the individuals with whom one interacts in social situations, such as delivering a speech to an audience or having a one-on-one conversation. Those who experience social anxiety commonly fear that social interaction partners actively evaluate their performance within social situations (APA, 2013). Historically, studies on SAD focused on fears of negative evaluations during social interactions (Leary et al., 1988). However, recent research reveals that these fears manifest in at

least two ways, namely fears of negative evaluation (FNE) and fears of positive evaluation (FPE; Clark, 2005; Rapee & Heimberg, 1997; Weeks et al., 2008). Whereas individuals who experience FNE often display fears regarding being negatively perceived by others *in vivo*, or within the situation, individuals who experience FPE often display fears regarding negative backlash from peers after receiving praise. Research on FPE draws, in part, on evolutionary models of social anxiety, which hold that anxiety arises from attempting to fit within a group, and at the same time apprehension or avoidance from challenging the leader of the group (Weeks & Howell, 2012). In these respects, FNE and FPE can be seen as complementary constructs designed to explain how individuals who experience social anxiety react to various kinds of evaluative scenarios.

The most widely used measures of these fears of evaluation are the Brief Fear of Negative Evaluation Scale (BFNE; Leary, 1983) and Fear of Positive Evaluation Scale (FPES; Weeks et al., 2008). The psychometric evidence supporting these measures largely comes from their use as self-report instruments administered to adults. Briefly, these measures appear to index distinct constructs that uniquely relate to measures of social anxiety and related processes (Rodebaugh et al., 2012; Weeks et al., 2010). For instance, relative to BFNE scores, FPES scores display a stronger correlation with measures of concerns of social reprisal resulting from positive impressions (Weeks & Howell, 2012). Further, recent work finds that BFNE and FPES scores differentially predict self-reported arousal depending on the evaluative context. Specifically, in a sample of adults who received *in the moment* performance feedback following delivery of a speech, BFNE scores uniquely predicted self-reported arousal after receiving negative evaluations. In contrast, FPES scores uniquely predicted self-reported arousal after receiving positive evaluations (Lipton et al., 2020).

Current research primarily focuses on measurement and assessment of evaluative fears among adults. Importantly, as evaluative concerns often manifest within performance-based scenarios, much of our understanding of the psychometric properties of the BFNE and FPES relate to how adults experience these concerns within developmentally appropriate evaluative contexts, such as work scenarios (e.g., APA, 2013; Lipton et al., 2020). Thus, the need for understanding the psychometric properties of these instruments when administered to adolescents comes, in part, from the idea that the social contexts where adolescents experience these concerns may vary greatly from those most often experienced by adults (Alfano & Beidel, 2011). In particular, adolescents may experience heightened distress within social situations with same-age peers linked to social status, social identity, or social affiliation (Hofmann et al., 1999). These situations are likely to manifest in ways that adolescents encounter as novel or uncertain in terms of their social milieu (e.g., one-on-one and group social interactions at parties or extracurricular activities; Cannon et al., 2020; Glenn et al., 2019;).

Taken together, the reality that many different kinds of social situations may elicit adolescents' evaluative fears dictates that no one measure could possibly capture all of the ways in which adolescents experience these fears and for all situations (see also De Los Reyes et al., 2017). The variable and complex nature of adolescents' clinical presentations necessitate administering assessments that capture the unique perspectives of not only adolescents, but also significant others in their lives (e.g., De Los Reyes et al., 2019a). In particular, parents often initiate mental health services on behalf of adolescents (Hunsley & Lee, 2014). Further, parents play a key role in clinical assessments of adolescent social anxiety (e.g., De Los Reyes & Makol, 2019; Marsh et al., 2020). Thus, in recent work researchers have begun to test the psychometric properties of adolescent self-report and parent report versions of both the BFNE and FPES.

Specifically, several investigations have found that both adolescent self-reports and parent reports on these measures display acceptable levels of internal consistency and relate to established measures of social anxiety and related processes (e.g., safety behaviors; Karp et al., 2018; Lipton et al., 2014; Szollos et al., 2019). Yet, prior work has focused exclusively on testing scores from the BFNE and FPES in relation to self- and parent-reported scores on other instruments. We know little about whether scores from the BFNE and FPES display *criterion-related validity* in relation to actual performance in situations germane to displays of adolescent social anxiety, namely interactions with unfamiliar peers. This is a key consideration, as it relates to use of assessments of evaluative fears in the context of psychosocial interventions. Specifically, evidence-based psychosocial interventions for social anxiety such as exposure-based therapies involve working with adolescent clients to develop strategies for effectively managing their thoughts, emotions, and behaviors within the situations where they experience symptoms and associated impairments (e.g., initiating conversations with peers; Alfano & Beidel, 2011; Raggi et al., 2018). Recent work highlights the need for therapeutic exposures to simulate the specific situations that bring about distress in the outside world (Sewart & Craske, 2020). In these respects, if measures of evaluative fears such as the BFNE and FPES predict how adolescents react to actual social situations, then scores from these measures could usefully inform crucial clinical decisions. Indeed, recent work on *measurement-based care* has focused on leveraging standardized measures to identify treatment targets and track treatment response (e.g., Weisz et al., 2011, 2019). Similarly, if measures of evaluative fears predict how adolescents react to anxiety-provoking situations, then scores from these measures could inform treatment planning. For instance, if scores from the BFNE and FPES predict how adolescents

react to interactions with unfamiliar peers, then future work could identify scoring thresholds to identify adolescents whose evaluative fears ought to be targeted within these situations.

In the context of criterion-related validity, it is also important to consider the incremental value of assessing multiple domains of evaluative fears, as well as of taking a multi-informant approach to assessing these fears. Specifically, we previously mentioned that FNE and FPE reflect complementary constructs, and recent work indicates that socially anxious individuals may experience heightened levels of both of these fears simultaneously, or alternatively only one of these fears (Lipton et al., 2016; Szollos et al., 2019). Because FNE and FPE may differentially predict relevant outcomes (Lipton et al., 2020; Weeks & Howell, 2012), important yet unanswered questions involve not only the criterion-related validity of measures like the BFNE and FPES, but also the *incremental validity* of these measures (Garb, 2003). That is, do they each contribute unique data, relative to each measured domain (i.e., FNE, FPE) and the informants completing each of the measures (De Los Reyes et al., 2015; Hunsley, 2003)? Our study addressed these key issues regarding the psychometric properties of the BFNE and FPES.

Purpose and Hypothesis

We sought to address gaps in research on measuring adolescents' fears of evaluation. Within a mixed clinical/community sample of adolescents and their parents, we examined reports of adolescents' FNE and FPE completed by adolescents as well as their parents. In particular, we examined relations between these measures and trained independent observers' ratings of adolescent social anxiety and social skills, as displayed within an innovative set of tasks designed to simulate adolescents' interactions with unfamiliar peers (i.e., *Unfamiliar Peer Paradigm*; Cannon et al., 2020). We tested one hypothesis and one exploratory aim. First, we expected both adolescent self-report and parent report on the BFNE and FPES to demonstrate

criterion-related validity in relation to independent observers' ratings of adolescents' social anxiety and social skills when interacting with unfamiliar peers.

Second, recent work with adolescents suggests that scores taken from the BFNE and FPES may differ in whether they display evidence of incremental validity (Karp et al., 2018). In this study, parents' and adolescents' BFNE reports displayed incremental validity in relation to survey measures of adolescent social anxiety, relative to their FPES reports. Further, relative to their BFNE reports, parents' and adolescents' FPES reports displayed incremental validity in relation to survey reports of adolescent social anxiety. Yet, adolescents' BFNE and FPES reports (but not parents' reports) related to adolescents' self-reported arousal within social interactions. Further, within adolescents' reports, the FPES displayed incremental validity in relation to self-reported arousal within social interactions, relative to the BFNE. However, their BFNE reports did not display incremental validity in relation to self-reported arousal, relative to their FPES reports. Prior work appears to indicate that adolescents' and parents' reports differ in their incremental validity when predicting experiences within social interactions. Yet, these findings may be attributable to *criterion contamination*. Indeed, in these tests adolescents provided reports for both predictor (BFNE, FPES), and criterion (arousal) measures, whereas parents only provided data for predictors (Garb, 2003). By leveraging ratings of trained independent observers as criterion variables, our study built on prior work by avoiding issues of criterion contamination. Thus, as with Karp et al. (2018), we tested incremental validity, both between informants' reports (e.g., parent-reported BFNE relative to self-reported BFNE) and within informants (e.g., self-reported FPES relative to self-reported BFNE). Given the criterion contamination issues present in prior work and the relatively little work on incremental validity generally when using these measures with adolescents, we considered this aim to be exploratory.

Method

Recruitment and Participant Characteristics

We recruited participants based on two advertisements which described either (a) a non-clinic study examining parent and adolescent relationships (*community control adolescents*) or (b) a social anxiety evaluation for "shy" adolescents (*clinic-referred adolescents*). The following inclusion criteria were used: (a) adolescents were required to be aged 14 to 15 years and currently living with the participating parent, (b) adolescents and parents needed to be proficient in speaking and reading English, (c) parents needed to report that the adolescent had no learning or developmental disabilities, (d) parents needed to report that the adolescent had not received cognitive behavioral therapy for at least three months prior to participating in the study, and (d) adolescents and parents needed to understand the consent and assent process. The clinic-referred group received an assessment of the adolescent's social anxiety and referrals to local providers for diagnostic testing and treatment, whereas the community control group did not receive feedback or referrals. This recruitment approach results in two groups that significantly differ on levels of social anxiety across adolescent- and parent-reported surveys, and observed behavior on laboratory-controlled tasks (Deros et al., 2018; Glenn et al., 2019; Rezeppa et al., 2020).

We recruited 105 adolescents for the current study, of which 37 adolescents came from the clinic-referred group. There were 68 female (65%) and 37 male (35%) adolescents, with a mean age of 14.5 years (SD = 0.5). The racial/ethnic identities of the adolescents, as reported by parents, included African American or Black (64%); White, Caucasian American, or European (33%); Asian American or Asian (6%); Hispanic or Latino/a (11%); American Indian (1%); or "Other" (10%). Parents were allowed to select more than one racial/ethnic group, and as such, the demographic rates total to greater than 100%. Parent-reported family income indicated that

30 of the families earned $500 or less per week, 25 earned between $501 and $900 per week, and 50 earned more than $901 in income per week. Parent participants primarily consisted of biological mothers/fathers (94%), with the remainder of the sample consisting of other caregivers (e.g., adoptive caregiver, part-time guardian, step-parent; 6%). Parents reported their marital status as currently married (44%), never married (24%), divorced from a significant other (17%), separated from a significant other (9%), living with a significant other (5%), or widowed (1%). The sample's demographic figures are consistent with economic and racial/ethnic data for the geographic area of recruitment (U.S. Census Bureau, 2016).

We used an analytic approach that pooled the clinic-referred and community control groups as one sample. Prior work suggests that this approach results in a dimensionally varied sample of adolescents enriched for displays of and risk for various mental health concerns (e.g., Glenn et al., 2019). Further, prior work demonstrates that these clinic-referred and community control groups do not differ significantly on the demographic characteristics reported previously (e.g., Deros et al., 2018; Karp et al., 2018). Demographic data for the two groups are available upon request from the corresponding author.

Procedure

Participants in the current study completed a number of measures and tasks as part of a larger study examining adolescent social anxiety (De Los Reyes et al., 2019b). The Institutional Review Board of the large Mid-Atlantic university where the study was conducted approved all study procedures. Parents and adolescents completed a series of surveys via Qualtrics online software on computers located in the laboratory space. Parents reported demographic information about themselves and their adolescent, and adolescents and parents completed survey measures in a counterbalanced order. Following completion of these measures,

adolescents participated in the Unfamiliar Peer Paradigm described below. After completing the study, all parents and adolescents were compensated $100 for their time ($50 to adolescents, $50 to parents), and debriefed by a staff member regarding study procedures. Lastly, independent observers (i.e., research personnel who were not involved in the assessment) completed ratings of the adolescents' social anxiety and social skills based on video archives of the adolescents participating in the Unfamiliar Peer Paradigm.

Survey Measures

Adolescents completed a battery of survey measures examining their thoughts, feelings, and behaviors and parents completed a battery of survey measures about themselves and about their adolescent's thoughts, feelings, and behaviors. Parents and adolescents answered the same measures with minor modifications to fit each of their perspectives (i.e., "I" changed to "My child"). The following measures comprise a subset of the total measures completed. We report in Table 1 internal consistency and inter-rater reliability estimates for all study measures.

Brief Fear of Negative Evaluation Scale (BFNE; Leary, 1983)

The BFNE measures fears of negative evaluation from others (Clark, 2005; Rapee & Heimberg, 1997). The measure includes 12 items with a Likert scale ranging from 1 (*Not at all characteristic of me*) to 5 (*Extremely characteristic of me*). An example item is, "When I am talking to someone, I worry about what they may be thinking about me." The measure also includes reverse-scored items such as, "I rarely worry about what kind of impression I am making on someone." The BFNE is a well-established instrument with excellent reliability and validity (Weeks et al., 2005).

Fear of Positive Evaluation Scale (FPES; Weeks et al., 2008)

The FPES assesses fears of positive evaluation from others (Weeks et al., 2008). On this 10-item measure, participants make responses using a Likert scale ranging from 0 (*Not at all true*) to 9 (*Very true*). An example item is, "I am uncomfortable exhibiting my talents to others, even if I think my talents will impress them." The measure also includes reverse-scored items such as, "I often feel under-appreciated, and wish people would comment more on my positive qualities." However, as in prior work (Karp et al., 2018), we did not use these reverse-scored items to calculate the total score. Similar to the BFNE, the FPES is a well-established instrument with excellent reliability and validity, and the BFNE and FPES each capture distinct fears of evaluation (Weeks & Howell, 2012).

Unfamiliar Peer Paradigm

All adolescents participated in the Unfamiliar Peer Paradigm (Cannon et al., 2020), a series of standardized tasks designed to simulate social interactions with same-age, unfamiliar peers that commonly provoke anxiety among adolescents. Within these tasks, we leveraged undergraduate and post-baccalaureate research personnel who we trained to "stand in" and present as same-age, unfamiliar peer confederates. Participants completed these tasks in a counterbalanced order. Below, we provide brief descriptions of each of these tasks (see also Deros et al., 2018; Glenn et al., 2019). We have also posted full details regarding peer confederate training and examples of task procedures (e.g., manuals and videotaped renditions of our tasks) on the Open Science Framework platform (De Los Reyes, 2020).

Simulated Social Interaction Test (SSIT)

The SSIT consists of a series of five role-playing scenes between the adolescent and a gender-matched peer confederate. The scenes were created to portray potentially stressful social

situations. The peer confederate initiated the conversation with two standardized lines and the participant responses. Each scene lasted approximately one to three minutes. The SSIT is designed so that each role-play includes a different social interaction including offering/accepting assistance, giving/receiving a compliment, and reacting to inappropriate behavior. There was one practice role-play to ensure that the participant understood the task.

Unstructured Conversation Task (UCT)

The UCT simulates an extended interaction between peers. Participants interacted with the same peer confederate who appeared in the SSIT. The interaction lasted three minutes and started with the instruction "Pretend it is your first day of class and you do not know anyone." We trained peer confederates to react neutrally to all participant comments (i.e., no standardized responses were provided to the peer confederate) and to let the participant lead the conversation.

Impromptu Speech Task (IST)

The IST simulates situations in which adolescents are required to speak publicly to an audience (e.g., class presentations). The participant gave a speech about their opinions on one-to-three predetermined topics including politics, public health, and legal issues. Adolescents had three minutes to prepare their speech, and research personnel instructed them to speak for 10 minutes. However, personnel provided adolescents with the option to stop their speech after 3 minutes if they felt too anxious to continue. Adolescents delivered their speech in front of the task administrator, peer confederate from the SSIT and UCT, and a third peer confederate. The confederates and administrator maintained neutral facial expressions and eye contact with the participant, and refrained from engaging in verbal or nonverbal interactions.

Trained Independent Observers' Ratings of Adolescent Social Anxiety and Social Skills

Trained independent observers rated adolescent behavior as displayed within the Unfamiliar Peer Paradigm. A pair of independent observers rated each adolescent on their level of social anxiety and social skills as displayed during these interactions. We provide in online supplementary material a complete description of our approach to training independent observers. Since we assigned two, trained independent observers to rate each adolescent, we calculated composite scores for all seven social anxiety and social skills ratings by averaging the two ratings for each task per rated domain. Based on these composite scores, the internal consistency estimates were high for the seven social anxiety ratings ($\alpha = .93$) and the seven social skills ratings ($\alpha = .91$). Consequently, to reduce Type I Error we aggregated the seven social anxiety ratings for all 105 adolescents into a single mean social skills rating, and we did the same for the seven social skills ratings (see Table 1). Although we computed two composite scores for all adolescents (one for observed social anxiety, one for observed social skills), one adolescent was missing data on one of the five SSIT role plays, and three adolescents were missing data on the IST because they declined to give a speech. Thus, for these adolescents, we based their composite scores on six, rather than seven, ratings. Ratings from these independent observers relate to established social anxiety surveys and distinguish adolescents on referral status (Cannon et al., 2020; Glenn et al., 2019; Makol et al., 2020).

Data Analytic Plan

First, we calculated estimates of internal consistency (Cronbach's α) for all survey measures and inter-rater reliability (intraclass correlation coefficients [*ICC*s]) for independent observers' social anxiety and social skills ratings. Second, to examine criterion-related validity, we computed bivariate correlations among adolescent and parent reports on the BFNE and FPES,

and independent observer ratings of social anxiety and social skills. These correlations only provide information about whether the measures relate to each other at the bivariate level, and do not reveal whether scores taken from the BFNE and FPES contribute incremental information about adolescents' reactions to interactions with unfamiliar peers. Thus, a third set of tests involved examining incremental validity using a series of hierarchical linear regressions. With independent observers' ratings of either social anxiety or social skills as the criterion variable, we tested incremental validity in two ways. Specifically, we tested incremental validity of informants' reports relative to each other (i.e., incremental validity of parent reports relative to adolescents, and vice versa), as well as the incremental validity of scores taken from the BFNE relative to the FPES, and vice versa. In these regressions, scores from either the BFNE or FPES were entered individually into two separate steps of the regression equation, in order to test for significant increases in explained variance in step 2, relative to step 1.

For all tests, we interpreted statistical significance of findings based on a p value cutoff of $< .05$. We examined magnitudes of effect sizes based on Cohen's (1988) d (small: 0.30; medium: 0.50; large: 0.80) and r (small: .10; medium: .30; large: .50).

Results

Preliminary Analyses

Skewness and Outlier Analysis

To determine if any of our study variables deviated significantly from normality (i.e., skewness and kurtosis), we conducted a descriptive analysis of adolescent and parent responses to BFNE and FPES, as well as independent observer ratings of social anxiety and social skills. The data met basic assumptions of parametric statistical tests (skewness/kurtosis in range of ± 2.0). Table 1 displays the means and standard deviations for all study measures and ratings.

Internal Consistency and Inter-Rater Reliability

We report in Table 1 internal consistency and inter-rater reliability estimates for all study measures. Using Cronbach's α, we assessed internal consistency of adolescent and parent reports on the BFNE and FPES. All reports had acceptable levels of internal consistency ($\alpha > .08$). We assessed inter-rater reliability for independent observer ratings using *ICC*s(1,2). The *ICC*s (for average measures) reported in Table 1 for independent observer ratings of social anxiety and social skills fell within the "excellent" range based on established thresholds (Cicchetti, 1994).

Tests of Criterion-Related Validity

In Table 2, we report bivariate correlations representing correspondence estimates among adolescent and parent reports of BFNE and FPES as well as observer ratings of anxiety and social skills. Supporting previous work, we observed low-magnitude correlations between adolescent and parent FPES reports, as well as moderate-magnitude correlations between adolescent and parent BFNE reports (De Los Reyes, et al., 2015; Karp et al., 2018). Adolescents' self-reports (BFNE and FPES) moderately correlated with independent observers' social anxiety and social skills ratings. In contrast, parents' BFNE reports did not significantly correlate with independent observers' ratings of either social anxiety or social skills. Further, parents' FPES reports only significantly correlated with independent observers' ratings of social anxiety. We graphically depict a summary of these findings in Figure 1a.

Tests of Incremental Validity

Adolescent vs. Parent

Findings in Table 2 revealed that adolescents' self-reports (and not parent reports) related to observed social skills, thus eliminating the need to test incremental validity of these two informants with regard to observed social skills. Further, findings in Table 2 indicated that

whereas both adolescents' BFNE and FPES reports related to observed social anxiety, only parents' FPES reports related to observed social anxiety. Therefore, our tests of the incremental validity of adolescent and parent reports (i.e., relative to each other) focused on relations between the FPES and observed social anxiety. As reported in Table 3, both adolescents' and parents' FPES reports demonstrated incremental validity in relation to observed social anxiety, relative to each other. We graphically depict a summary of these findings in Figure 1b.

BFNE vs. FPES

As mentioned previously, only adolescent self-reports consistently related to observed social anxiety and social skills (Table 2). These findings eliminated the need to test incremental validity of parents' reports on the BFNE and FPES (relative to each other). Thus, we only examined the incremental validity of adolescents' self-reports (Table 4). Adolescents' FPES reports displayed incremental validity relative to their BFNE reports in relation to observed social anxiety and social skills. However, adolescents' BFNE reports did not display such evidence of incremental validity, relative to their FPES reports. We graphically depict a summary of these findings in Figure 1c.

Discussion

Main Findings

This study expands upon the literature of the psychometric properties of multiple informants' reports on the BFNE and FPES by testing whether reports on these measures relate to adolescents' behavior within interactions with unfamiliar peers. We made three main findings and we graphically depict a summary of these findings in Figure 1. First, both adolescents' BFNE and FPES self-reports displayed criterion-related validity in relation to observed social anxiety and social skills. In contrast, parents' FPES reports (and not their BFNE reports) related

to observed social anxiety, and neither their FPES nor BFNE reports related to observed social skills. Second, both informants' FPES reports displayed incremental validity in relation to observed social anxiety, relative to each other. Third, adolescents' FPES reports but not their BFNE reports contributed incremental value, relative to each other, in relation to both observed anxiety and social skills. In sum, both parents and adolescents provided reports about adolescents' fears of evaluation that displayed criterion-related validity in relation to adolescents' observed behavior within interactions with unfamiliar peers. However, there are nuances to these interpretations. Relative to parents' reports, adolescents' reports across fears of negative and positive evaluation more consistently related to observed social anxiety *and* social skills within these interactions (Table 2). Further, across both informants and evaluative domains, fears of positive evaluation (and not negative evaluation) provided incrementally valuable information when understanding how adolescents behave within interactions with unfamiliar peers (Tables 3 and 4).

Research and Theoretical Implications

These findings extended prior work on the psychometrics of the BFNE and FPES when administered to adolescents. Three implications for research and theory are particularly important. First, when administered to adolescents, psychometric work on the BFNE and FPES has focused exclusively on relations between these measures and other self-report and parent report instruments (Karp et al., 2018; Lipton et al., 2014; Szollos et al., 2019). Our limited understanding of how these instruments relate to actual performance within social situations germane to adolescent social anxiety (i.e., interactions with unfamiliar peers) limits the utility of these measures in clinical care settings. In particular, exposure-based therapies often focus on reducing adolescents' symptoms and impairments in social situations, and adolescents' fears of

evaluation may factor prominently in their clinical presentations. Thus, our findings point to the ways in which measures like the BFNE and FPES may inform service delivery, particularly with regard to identifying the social situations relevant to constructing therapeutic exposures. In these respects, future research should test the utility of the BFNE and FPES for not only tracking treatment response, but also for treatment planning purposes, in line with recent work on measurement-based care (e.g., Weisz et al., 2011, 2019).

Second, recent work supports the use of both adolescent and parent reports when assessing FNE and FPE among adolescents but suggest that these reports might vary as to their incremental validity in relation to key clinical indices (e.g., Karp et al., 2018; Szollos et al., 2019). Similarly, our findings indicate that, in relation to observed behavior, the utility of this multi-informant approach might vary, depending on the behaviors assessed (see Figure 1). In relation to observed social anxiety, both adolescents' and parents' reports of FPE provided incrementally valuable information, and adolescents' reports (but not parents' reports) of FNE related to these behaviors. In contrast, only adolescents' reports of FPE and FNE related to observed social skills. One possible reason for these discrepancies may stem from the nature of the social interactions in which we gathered independent observers' behavioral ratings. In particular, these social interactions were designed to estimate how adolescents behave around unfamiliar peers, and prior work indicates that adolescents' self-reported anxiety and related domains (e.g., safety behaviors) more consistently relate to their self-reported experiences within these interactions, relative to parent reports (for a review, see Cannon et al., 2020). It may be that the discrepancies in findings between the two informants reflect the idea that parents have relatively few opportunities to observe adolescents within these interactions, as they often occur outside of the home (see also De Los Reyes, Ohannessian, & Racz, 2019). These issues merit

further study, particularly research examining measures of FNE and FPE in relation to adolescents' observed behavior in interactions with unfamiliar individuals other than peers (e.g., unfamiliar adults).

Third, previous research with young adults suggests that the BFNE and FPES provided additional information respective to each other about self-reported anxiety in social interactions (Weeks et al., 2008). However, we found that, relative to the BFNE, only adolescent reports on the FPES provided unique information about social anxiety and social skills. Importantly, the presence of FPE may both directly and indirectly affect levels of FNE (Weeks et al., 2008). Consistent with this notion, for adolescents in our study, the relations between FNE and domains of observed behavior were no longer significant, once we accounted for FPE. Stated another way, it may be that among adolescents, FNE's relations to social outcomes might manifest through FPE (i.e., FPE as mediator of these relations). In this respect, measures of FPE may yield more unique information about adolescents' behavioral reactions to interactions with unfamiliar peers, relative to measures of FNE. At the same time, we acknowledge that, because we leveraged a cross-sectional study design, we were unable to test mediating pathways among FPE, FNE, and observed behavior. Importantly, prior work indicates that cross-sectional tests yield biased estimates of mediation, relative to true, temporally ordered tests (see Maxwell & Cole, 2007). This work indicates that one cannot use model fit indices based on cross-sectional data to "preview" how that model unfolds temporally, thus precluding our ability to test such a model in this study (see also Carper et al., 2018; De Los Reyes, 2017). In these respects, our interpretations are speculative and ought to be tested in future longitudinal work.

Limitations and Future Directions

Our findings should be interpreted in light of study limitations. Specifically, the unfamiliar peer confederates who participated in the Unfamiliar Peer Paradigm were undergraduate and post-baccalaureate personnel who we trained to simulate unfamiliar, same-age peers. As in prior work using the same or similar paradigms (Anderson & Hope, 2009; Deros et al., 2018), only personnel who appeared youthful and could reasonably "stand in" as same-age, unfamiliar peers (e.g., wearing age-appropriate casual clothing, no facial hair for male confederates) posed as peer confederates in these studies. Nevertheless, peer confederates were a different age relative to our study participants. Further, we did not assess how believable it was to adolescents that confederates were their own age. Importantly, prior work indicates that adolescents' reactions to unfamiliar peer confederates within this paradigm predict their reactions to a well-established task where they are (a) told explicitly that they will be interacting with same-age, unfamiliar peers; and (b) provided with photographic stimuli to support this element of the task (i.e., Cyberball; see Karp et al., 2018). Nevertheless, we cannot be certain that adolescents' reactions to the Unfamiliar Peer Paradigm would have been identical to their reactions to interactions with same-age, unfamiliar peers in general. Further, we recruited participants within a fairly limited age range of 14-15 year olds. Thus, our findings might specifically apply to adolescents within this age range and may not generalize to adolescents within earlier and later developmental periods. Thus, future research should examine the generalizability of the findings when using age-matched adolescents as peer confederates, and within samples of older and younger adolescents.

Concluding Comments

Fears of evaluation (FNE, FPE) play a crucial role in the development and maintenance of adolescent social anxiety. Although psychometrically sound measures of FNE and FPE exist to assess these fears among adolescents, we know little about whether these measures index fears relevant to how adolescents react behaviorally to key contexts in their social worlds. This is an important gap in the literature given how crucially *in vivo* experiences within anxiety-provoking social situations factor into the delivery of evidence-based psychosocial interventions for the condition (i.e., exposure-based therapies; Raggi et al., 2018). In this study, we learned that established measures of FNE and FPE relate to adolescents' observed behavior when interacting with unfamiliar peer confederates, a social context within which adolescents may display social anxiety and deficits in interpersonal functioning (e.g., social skills; Cannon et al., 2020; Glenn et al., 2019; Hofmann et al., 1999). However, these relations varied by informant, such that adolescents' self-reported FNE and FPE more consistently related to their observed behavior, relative to parents' reports about these same domains. Further, among adolescents' self-reports, their reports about FPE appeared to provide the most unique information relevant to understanding their behavior within unfamiliar peer interactions. These findings support the need to take a multi-informant, multi-method approach to understanding adolescents' evaluative fears within clinical assessments of adolescent social anxiety. Further, we encourage future research that tests whether multi-informant reports about FNE and FPE usefully inform screening and treatment planning assessments relevant to adolescent social anxiety.

Conflict of Interest

The first, second, third, and fourth authors declare that they have no conflict of interest.

Compliance with Ethical Standards

Funding: Efforts by the second and fourth authors were supported by a grant from the Institute of Education Sciences (R324A180032).

Experiments Participants: All procedures performed in studies involving human participants were in accordance with the ethical standards of the University of Maryland at College Park's Institutional Review Board and with the Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants in the study.

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the University of Maryland at College Park's Institutional Review Board 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.

Author Contributions: First author: assisted in executing the study, assisted with data analyses, and wrote the paper. Second and third authors: assisted in executing the study, assisted with data analyses, and collaborated in editing the paper. Fourth author: designed the study, assisted in executing the study, assisted with data analyses, and collaborated in editing the paper.

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Table 1

Means (M), Standard Deviations (SD), and Inter-Rater Reliability (ICC)/Internal Consistency (α) Estimates of Study Measures

Variable	**M**	**SD**	***α/ICC***
Brief Fear of Negative Evaluation Scale			
Adolescent Self-Report	34.32	9.25	.87
Parent Report about Adolescent	34.50	9.72	.90
Fear of Positive Evaluation Scale			
Adolescent Self-Report	24.44	15.09	.84
Parent Report about Adolescent	23.62	15.99	.87
Observed Social Skills Rating	3.43	.89	.82
Observed Social Anxiety Rating	3.02	.83	.76

Table 2

Correlations among adolescent and parent reports on measures of adolescent fears of negative and positive evaluation with observed ratings of anxiety and skill

Variable	1	2	3	4	5	6
BFNE, adolescent self-report		.30**	.63***	.24*	-.23*	.24*
BFNE, parent report about adolescent			.21*	.62***	-.13	.19
FPES, adolescent self-report				.07	-.33*	.35***
FPES, parent report about adolescent					-.18	.24*
Observed Social Skills Rating						-.86***
Observed Social Anxiety Rating						

Note. BFNE = Brief Fear of Negative Evaluation Scale; FPES = Fear of Positive Evaluation Scale.

*$p < .05$; ** $p < .01$; *** $p < .001$

Table 3

Hierarchical regressions examining the incremental validity of multi-informant reports

Criterion Variable: Adolescent Social Anxiety (observer ratings)									
Variable	**ΔR^2**	**Total R**	**B (SeB)**	**β**	**Variable**	**ΔR^2**	**Total R**	**B (SeB)**	**β**
Step 1	.12	.35			*Step 1*	.06	.24		
FPES-C			.02(.01)	.35***	FPES-P			.01(.01)	.24*
Step 2	.05	.41			*Step 2*	.11	.41		
FPES-C			.02(.01)	.34***	FPES-P			.01(.01)	.22*
FPES-P			.01(.01)	.22*	FPES-C			.02(.01)	.34***

Note. FPES-C = Adolescents' Fear of Positive Evaluation Scale; FPES-P = Parents' Fear of Positive Evaluation Scale.

*$p < .05$; ** $p < .01$; *** $p < .001$

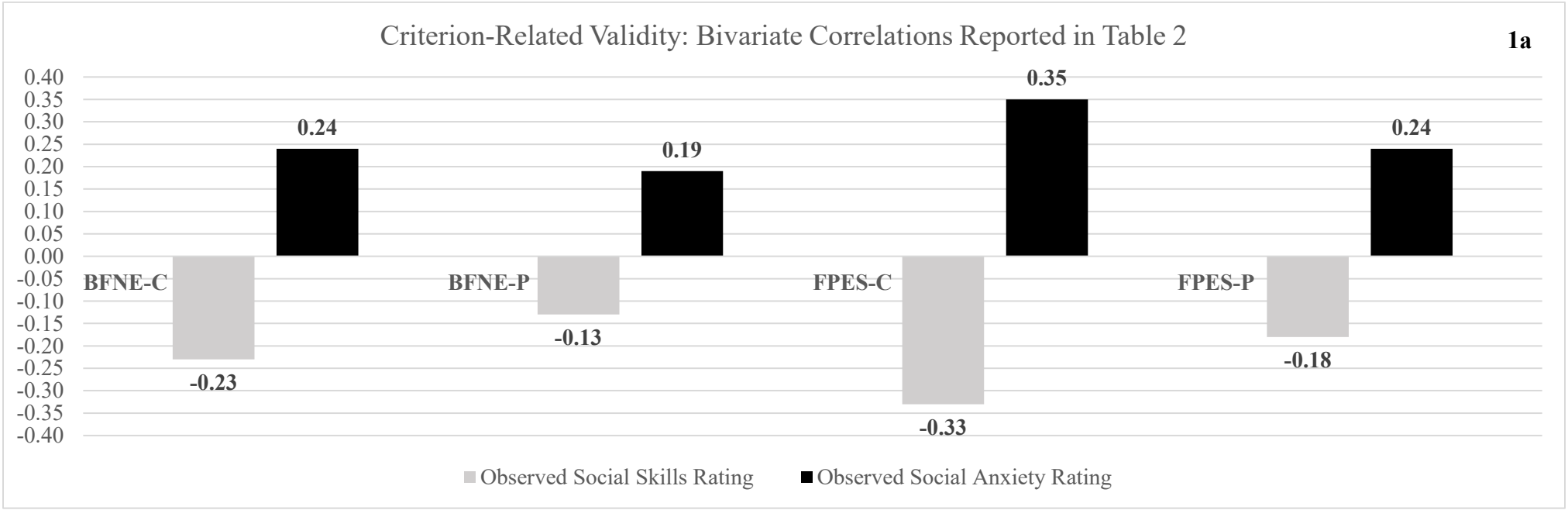
Table 4

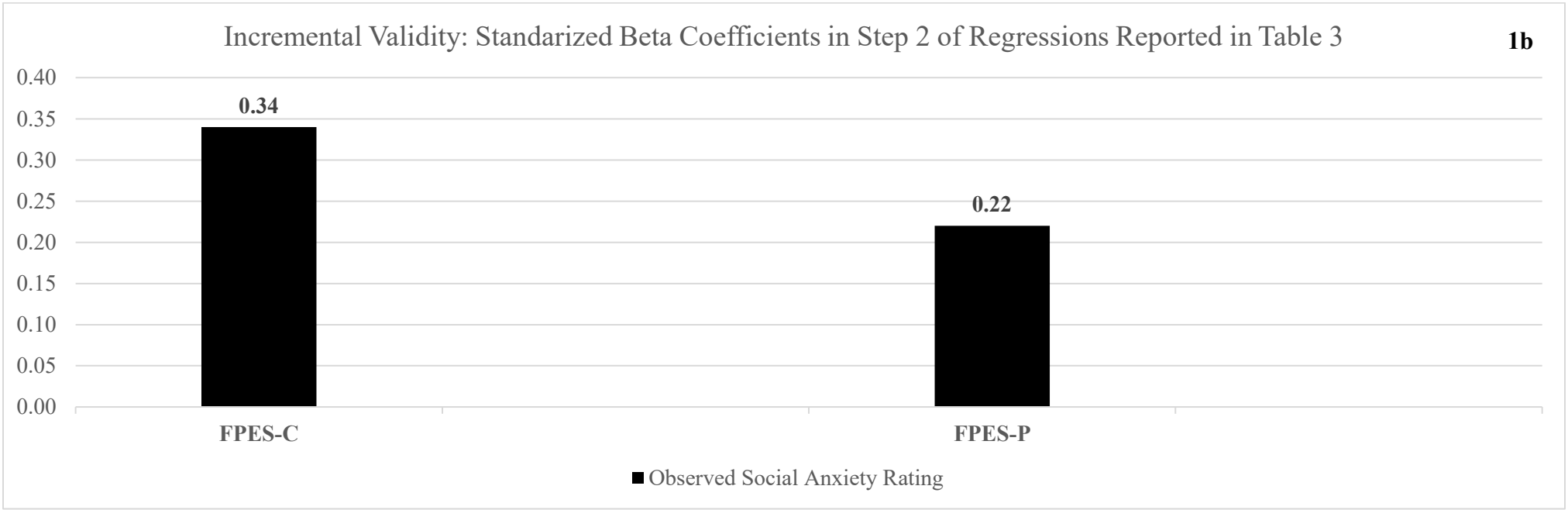
Hierarchical regressions examining the incremental validity of adolescent self-reports of BFNE and FPES

Criterion Variable: Adolescent Social Skills (observer ratings)									
Variable	**ΔR^2**	**Total R**	**B (SeB)**	***β***	**Variable**	**ΔR^2**	**Total R**	**B (SeB)**	***β***
Step 1	.11	.33			*Step 1*	.05	.23		
FPES			-.02(.01)	-.33**	BFNE			-.02(.01)	-.23*
Step 2	.001	.33			*Step 2*	.06	.33		
FPES			-.02(.01)	-.31*	BFNE			-.003(.01)	-.03
BFNE			-.003(.01)	-.03	FPES			-.02(.01)	-.31*
Criterion Variable: Adolescent Social Anxiety (observer ratings)									
Variable	**ΔR^2**	**Total R**	**B (SeB)**	***β***	**Variable**	**ΔR^2**	**Total R**	**B (SeB)**	***β***
Step 1	.12	.35			*Step 1*	.06	.24		
FPES			.02(.01)	.35***	BFNE			.02(.01)	.24*
Step 2	.001	.35			*Step 2*	.06	.35		
FPES			.02(.01)	.33**	BFNE			.004(.01)	.04
BFNE			.004(.01)	.04	FPES			.02(.01)	.33**

Note. BFNE = Brief Fear of Negative Evaluation Scale; FPES = Fear of Positive Evaluation Scale.

*$p < .05$; ** $p < .01$; *** $p < .001$


Criterion-Related Validity: Bivariate Correlations Reported in Table 2
1a
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
-0.20
-0.25
-0.30
-0.35
-0.40
BFNE-C
BFNE-P
FPES-C
FPES-P
0.24
0.19
0.35
0.24
-0.23
-0.13
-0.33
-0.18
Observed Social Skills Rating
Observed Social Anxiety Rating


Incremental Validity: Standarized Beta Coefficients in Step 2 of Regressions Reported in Table 3
1b
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.34
0.22
FPES-C
FPES-P
Observed Social Anxiety Rating

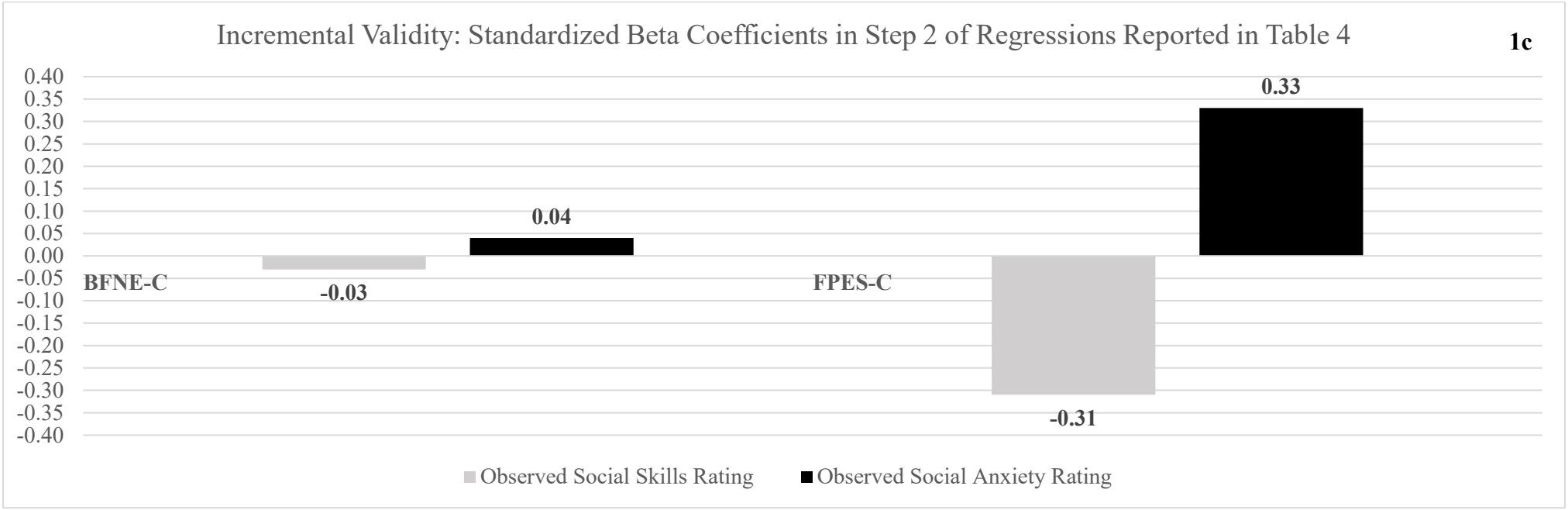


Figure 1. Graphical summary of the results of our criterion-related and incremental validity tests. We summarize these findings separately for magnitudes of correlations reported in Table 2 (Figure 1a), as well as standardized beta coefficients in step 2 of regressions reported in Table 3 (Figure 1b) and Table 4 (Figure 1c). BFNE-C = Adolescents' Brief Fear of Negative Evaluation Scale; BFNE-P = Parents' Brief Fear of Negative Evaluation Scale; FPES-C = Adolescents' Fear of Positive Evaluation Scale; FPES-P = Parents' Fear of Positive Evaluation Scale.