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Informant Discrepancies in Adult Social Anxiety Disorder Assessments: Links With Contextual Variations in Observed Behavior

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Abstract

Multi-informant assessments of adult psychopathology often result in discrepancies among informants' reports. Among 157 adults meeting criteria for either the generalized ($n = 106$) or nongeneralized ($n = 51$) social anxiety disorder (SAD) subtype, we examined whether discrepancies between patients' and clinicians' reports of patients' symptoms related to variations in both SAD subtype and expressions of social skills deficits across multiple social interaction tasks. Latent class analyses revealed two behavioral patterns: (a) context-specific social skills deficits and (b) cross-context social skills deficits. Similarly, patients' symptom reports could be characterized by concordance or discordance with clinicians' reports. Patient–clinician concordance on relatively high levels of patients' symptoms related to an increased likelihood of the patient meeting criteria for the generalized relative to nongeneralized subtype. Further, patient–clinician concordance on relatively high levels of patients' symptoms related to an increased likelihood of consistently exhibiting social skills deficits across social interaction tasks (relative to context-specific social skills deficits). These relations were robust in accounting for patient age, clinical severity, and Axis I and II comorbidity. Further, clinical severity did not completely explain variability in patients' behavior on laboratory tasks or discrepancies between patient and clinician reports. Findings provide the first laboratory-based support for the ability of informant discrepancies to indicate cross-contextual variability in clinical adult assessments, and the first of any developmental period to indicate this for SAD assessments. These findings have important implications for clinical assessment and developmental psychopathology research.

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Keywords

correspondence; informant discrepancies; multiple informants; Operations Triad Model; social anxiety disorder

Best practices in clinical assessments involve taking and incorporating multiple informants' reports (Hunsley & Mash, 2007). A key assumption underlying this practice is that there are no "definitive" measures of psychopathology (e.g., anxiety and aggression; Richters, 1992). The informants used vary widely, depending on developmental level, psychopathology domain, and purpose (e.g., diagnosis or treatment response). For instance, informants completing reports for children and adolescents (hereafter referred to collectively as "youth") include significant others (e.g., parents, teachers, and peers), self-report, and/or trained observers (e.g., clinical interviewers and behavioral coders; De Los Reyes & Kazdin, 2005).

In youth assessments, informants' clinical reports exhibit low-to-moderate correspondence (i.e., r s in the 0.20s to 0.30s; Achenbach, McConaughy, & Howell, 1987). Low correspondence levels translate into inconsistent findings in research and practice settings concerning gauging treatment response (De Los Reyes & Kazdin, 2006), treatment planning (Hawley & Weisz, 2003), and identifying efficacious treatments (De Los Reyes, Kundery, & Wang, 2011); and thus, introduce uncertainty into clinical decision-making (De Los Reyes, Alfano, & Beidel, 2011). Furthermore, historically informant discrepancies have largely been interpreted as measurement error or informant bias (De Los Reyes, in press). Yet, recent work demonstrates that informant discrepancies reflect the idea that (a) informants systematically vary in the contexts within which they observe youth behavior and (b) youth systematically vary in the contexts within which they express behaviors measured in clinical assessments (De Los Reyes & Kazdin, 2005; Kraemer et al., 2003). Thus, rather than measurement error, informant discrepancies convey meaningful information about how assessed behaviors vary across contexts (e.g., home vs. school; De Los Reyes, 2011). In turn, informant discrepancies may inform interpretations of diagnostic status, treatment response, and context-specific symptom expressions (Comer & Kendall, 2004; De Los Reyes, Henry, Tolan, & Wakschlag, 2009; Dirks, De Los Reyes, Briggs-Gowan, Cella, & Wakschlag, 2012). In this study, we extended research on informant discrepancies in clinical youth assessments to clinical adult assessments.

Multi-Informant Clinical Adult Assessments

Multi-informant clinical adult assessments yield low-to-moderate correspondence levels that are only slightly higher than those observed for youth assessments (i.e., r s in the 0.30s to 0.40s; Achenbach, Krukowski, Dumenci, & Ivanova, 2005). Relative to youth assessments, multi-informant clinical adult assessments typically rely on a constrained subset of clinician reports, self-reports, collateral reports (e.g., spouses), and in limited circumstances, behavioral coders of patients' performance on laboratory tasks (e.g., van der Ende, Verhulst, & Tiemier, 2012). In fact, a recent quantitative review (Achenbach et al., 2005) identified only 108 out of 51,000 articles published in a 10-year span that provided sufficient information to assess cross-informant correspondence (i.e., 0.2% of all studies).

Consequently, whereas informant discrepancies research in youth assessments has evolved to viewing discrepancies as reflections of contextual variation (De Los Reyes, 2011, in press), with few exceptions (Mosterman & Hendriks, 2011; Oltmanns & Turkheimer, 2009), discrepancies research in clinical adult assessments remains descriptive in scope.

The Operations Triad Model of Multi-Informant Assessment

Interestingly, recent theoretical work indicates that researchers conducting clinical adult assessments may also benefit from interpreting informant discrepancies as markers of contextual variability in symptom expression. Specifically, the Operations Triad Model (OTM; De Los Reyes, Thomas, Goodman, & Kunder, 2013) conceptualizes circumstances in which multiple informants' reports may be compared and interpreted. In one circumstance, Diverging Operations, informants' reports yield different outcomes, and the differences reflect patients' symptom expressions in some contexts and not others. In an alternative circumstance, Compensating Operations, informants' reports yield different outcomes, and these differences arise for methodological reasons (e.g., measurement error in one, some, or both reports).

Importantly, Diverging and Compensating Operations may inform interpretations of discrepancies between patients' self-reports and clinicians' reports. One possibility is that these discrepancies reflect Compensating Operations (e.g., patient reports less reliable or valid than clinician reports or vice versa). However, an alternative possibility is that the discrepancies reflect Diverging Operations. Specifically, discordance versus concordance may signal true inconsistencies versus consistencies in contextual expressions of patients' behaviors. Similar to child self-reports (e.g., Kraemer et al., 2003), adult self-reports ought to reflect observations of their own behavior within and across contexts (e.g., home and work). Conversely, in addition to accounting for patients' self-reports, clinicians are trained to incorporate into their reports observations of patients in the clinic setting (Groth-Marnat, 2009). Thus, clinicians' own observations of patients *in a single context* can be viewed as a key *factor* for meaningfully differentiating clinicians' reports from patients' self-reports. In fact, discrepancies may reflect behavior occurring within specific contexts, whereas concordance may indicate cross-context consistencies in behavior (Achenbach et al., 2005).

Multi-Informant Clinical Assessments of Adulthood Social Anxiety Disorder

Examining reporting discrepancies may be particularly beneficial to interpreting adulthood social anxiety disorder (SAD) assessments. Indeed, in multi-informant assessments of adolescent social anxiety, patient self-reports often disagree with other informants' reports (e.g., parents; De Los Reyes, Alfano, et al., 2011), and objective measures (e.g., psychophysiology; Thomas, Aldao, & De Los Reyes, 2012). Yet, even when reports disagree they all nevertheless yield valid data about social anxiety (De Los Reyes et al., 2012). Presumably, each report captures social anxiety in different ways (Silverman & Ollendick, 2005).

Multi-informant SAD assessments yield valid and contextually sensitive information, and in this respect informant discrepancies hold promise for interpreting assessment outcomes. Yet,

phenomenological challenges arise with regard to how the construct SAD ought to be conceptualized and assessed. For example, informants' reports of youth qualitatively vary; some self-reports *disagree* with other informants' reports, and some self-reports *correspond to a considerable extent* with other informants' reports (e.g., De Los Reyes et al., 2011a, 2011b). These findings suggest that discrepancies ought to be modeled categorically. However, recent work indicates that SAD symptoms tend to be expressed along a continuum of severity (e.g., Aderka, Nickerson, & Hoffman, 2012; El-Gabalawy, Cox, Clara, & Mackenzie, 2010; Ruscio, 2010). Alternatively, diagnostic manuals categorize SAD subtypes typified across contexts (i.e., generalized) or within specific contexts (i.e., nongeneralized; American Psychiatric Association [APA], 2001; Beidel, Rao, Scharfstein, Wong, & Alfano, 2010). Further, recommendations for the latest edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-V) involve maintaining the subtypes to identify patients who experience anxiety specifically within performance contexts (e.g., public speaking) based, in part, on research indicating that, relative to patients experiencing generalized SAD, patients experiencing SAD specific to performance situations express greater heart rate responses to laboratory speech tasks (Bögels et al., 2010).

In sum, SAD subtypes, to some extent, reflect cross-context consistencies (or inconsistencies). Therefore, subtypes can be used to test the ability of informant discrepancies to inform assessment outcomes. Specifically, when patient and clinician reports on questionnaire measures correspond on high symptom levels, this may indicate a generalized SAD subtype endorsed on a structured interview. Conversely, low correspondence may indicate a nongeneralized subtype. A second way to examine the meaning of informant discrepancies involves examining patients' variations in associated features of SAD, such as social skills deficits (APA, 2001; Turner, Beidel, Dancu, & Keys, 1986). Importantly, the availability of multiple observational tasks allows for a cross-context assessment of patients' social skills (e.g., structured or unstructured social interactions and performance situations; Beidel et al., 2010). Thus, assessing social skills deficits within multiple tasks may characterize patients on how consistently they express social skills deficits (i.e., cross-context social skills deficits vs. context-specific social skills deficits). If discrepancies between patient self-reports and clinician reports meaningfully correspond to contextual variations in patients' behavior, then these discrepancies should be able to distinguish patients who consistently express social skills deficits from those who express context-specific deficits.

Purpose and Hypotheses

This study extended the literature on informant discrepancies in clinical adult assessments. In a sample of adult patients who met diagnostic criteria for SAD, we examined whether patient-clinician reporting discrepancies related to two forms of behavioral variations of SAD: (a) SAD subtype and (b) laboratory observations of social skills.

We tested four hypotheses. First, as with adolescent SAD (De Los Reyes et al., 2012; De Los Reyes, Alfano et al., 2011; Thomas et al., 2012), we hypothesized low-to-moderate correspondence between patients' self-reports and clinician reports. Second, as with preschool disruptive behavior (De Los Reyes et al., 2009), we expected to identify

subgroups of patients who varied in whether they expressed social skills deficits across social skills tasks or not. Third, based on prior work with youth (De Los Reyes et al., 2011a, 2011b) we expected to identify patient–clinician subgroups that varied in correspondence on high symptom levels.

Fourth, we expected patients and clinicians whose reports corresponded on high symptom levels to be more likely than patients and clinicians whose reports did not correspond on high symptom levels to meet criteria for the generalized subtype. Similarly, we hypothesized that patients and clinicians whose reports corresponded on high symptom levels would be more likely than patients and clinicians whose reports did not correspond to relate to patients' cross-context expressions of social skills deficits. Consistent with the OTM (De Los Reyes, Thomas et al., 2013), observations supporting these hypotheses would reflect Diverging Operations, with null effects reflecting Compensating Operations.

We considered two factors that might relate to informant discrepancies and contextual variations. First, greater contextually consistent expressions may reflect greater clinical severity. Importantly, prior work is equivocal (e.g., assessments of attention/hyperactivity, antisocial and disruptive behavior, and social anxiety): Some studies find greater impairment for patients expressing symptoms across contexts versus specific contexts and other studies find no such differences (cf. Bögels et al., 2010; De Los Reyes et al., 2009; Dirks et al., 2012). Nonetheless, it was important to account for clinical severity when examining contextual variations in behavior. Second, clinical severity co-occurs with other patient characteristics, namely comorbid mood and personality disorder diagnoses (e.g., Hunsley & Lee, 2010). Impaired social skills also co-occur with depressive symptoms (e.g., Beidel et al., 2010). Thus, we accounted for clinical characteristics representing patients' clinical severity and diagnostic comorbidity.

Method

Participants and Procedure

Participants were drawn from a larger study of 464 adults responding to recruitment efforts for adults meeting criteria for SAD and adults meeting criteria for no psychological disorder. A full description of the total sample, recruitment methods, and procedures has been reported elsewhere (Beidel et al., 2010). We focused on the 179 patients who met primary diagnostic criteria via the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV*; APA, 2001) for either the generalized ($n = 119$) or nongeneralized ($n = 60$) SAD subtype. Diagnostic assessments were carried out using the Structured Clinical Interview for *DSM-IV* (First, Spitzer, Gibbon, & Williams, 1997), the Structured Clinical Interview for *DSM-IV* Axis II (First, Gibbon, Spitzer, & Williams, 1997), and the Anxiety Disorders Interview Schedule (ADIS) for *DSM-IV* (Di Nardo, Brown, & Barlow, 1995).

Of the 179 generalized and nongeneralized patients, 157 patients provided complete data. We conducted exploratory analyses to examine whether the 157 participants differed from the 22 excluded participants as a function of demographics (age, gender, race, marital status, and number of children), and clinical characteristics (global illness severity, clinical severity rating of primary diagnosis, SAD subtype, comorbid Axis I diagnoses [i.e., any diagnosis,

major depression, generalized anxiety], and comorbid Axis II diagnoses [i.e., any diagnosis, avoidant personality disorder, obsessive–compulsive personality disorder]). We conducted a large number of tests ($n = 14$) and did not have a priori hypotheses. Thus, we set a predefined bonferroni-corrected p value threshold of 0.003 (i.e., 0.05/14). No factor evidenced a significant relation to study inclusion/exclusion. The 157 participants we examined ranged in age from 18 to 78 years ($M = 38.39$, $SD = 13.80$). Sixty-five participants (41.4%) were male and 92 (58.6%) were female. Eighty-three participants were single (52.9%), 62 (39.5%) were married, and 12 (7.7%) were divorced or widowed. There were 111 (70.7%) Caucasians, 26 (16.6%) African Americans, eight (5.1%) Asians, four (2.5%) Latinas/Latinos, three (1.9%) from the Indian subcontinent, one (0.6%) Middle Easterner, three (1.9%) Pacific Islanders, and one (0.6%) adult of unknown race/ethnicity.

Prior work in this sample indicates that generalized and nongeneralized subtypes differ on demographic and clinical characteristics (Beidel et al., 2010). Thus, we conducted exploratory comparisons among the 157 participants, and in particular between the 106 generalized and 51 nongeneralized patients. The groups were compared on demographics (age, gender, race, marital status, and number of children), and clinical characteristics (global illness severity, clinical severity rating of the primary diagnosis, comorbid Axis I diagnoses [i.e., any diagnosis, major depression, generalized anxiety], and comorbid Axis II diagnoses [i.e., any diagnosis, avoidant personality disorder, obsessive–compulsive personality disorder]). Due to the number of tests ($n = 13$), we set a predefined bonferroni-corrected p value threshold of 0.004 (i.e., 0.05/13). Six factors evidenced a significant relation to subtype: Axis I comorbidity (generalized patients had higher rates of comorbidity [36.8%] relative to nongeneralized patients [9.8%]; $\chi^2 = 12.43$, $p < 0.001$); comorbid major depression (generalized patients had higher rates of comorbidity [15.1%] relative to nongeneralized patients [0%]; $\chi^2 = 8.57$, $p < 0.004$); Axis II comorbidity (generalized patients had higher rates of comorbidity [63.2%] relative to nongeneralized patients [7.8%]; $\chi^2 = 42.60$, $p < 0.001$); comorbid avoidant personality disorder diagnosis (generalized patients had higher rates of this diagnosis [58.5%] relative to nongeneralized patients [2%]; $\chi^2 = 45.80$, $p < 0.001$); patient age (generalized patients were younger [$M = 35.95$] relative to nongeneralized patients [$M = 43.45$]; $F(1, 155) = 10.80$, $p < 0.002$); global illness severity (generalized patients had a higher illness severity [$M = 5.24$] relative to nongeneralized patients [$M = 4.67$]; $F(1, 155) = 15.11$, $p < 0.001$); and clinical severity rating of the primary diagnosis (generalized patients had higher clinical severity ratings [$M = 6.11$] relative to nongeneralized patients [$M = 5.47$]; $F(1, 155) = 11.76$, $p < 0.002$). Thus, we statistically controlled for these six variables in tests of our main hypothesis (i.e., Hypothesis 4 below).

Measures

Patient self-report instruments of patients' symptoms—We collected two self-report measures. First, the Social Phobia and Anxiety Inventory (SPAI; Turner, Beidel, Dancu, & Stanley, 1989) assessed severity of SAD symptoms. The SPAI has high test–retest reliability, differentiates SAD patients from normal controls and other anxiety patients (Turner et al., 1989), has good concurrent and external validity (Beidel, Borden, Turner, & Jacob, 1989; Beidel, Turner, Jacob, & Cooley, 1989), and reflects both statistically reliable and clinically significant change following treatment (Beidel, Turner, & Cooley, 1993). We

used the SPAI difference score. Second, participants completed the Fear Questionnaire (Marks & Matthews, 1979), which has a 5-item Social Phobia subscale that assesses avoidance of performance or observation situations. Extensive evidence supports the reliability and validity of the Social Phobia subscale (e.g., Connor et al., 2000; Cox, Parker, & Swinson, 1996; Herbert, Bellack, & Hope, 1991).

Clinician report instruments of patients' symptoms—Clinician reports were based on the Hamilton Rating Scale for Anxiety (Hamilton, 1959) and Hamilton Rating Scale for Depression (Hamilton, 1960). We used total summary scores for both of these scales.

Indices of clinical severity—Doctoral-level clinicians who completed the diagnostic interviews also completed the 7-point Clinical Global Impressions Severity Scale (CGI; Guy, 1976). Additionally, we assessed severity of the patient's primary diagnosis using the clinical severity rating of the ADIS for *DSM-IV* (Di Nardo et al., 1995). We used these scores as covariates in tests of Hypothesis 4 to control for both patients' overall clinical severity, as well as clinical severity specific to the patient's anxiety.

Behavioral tasks used to assess patients' social skills—Three tasks were used to assess social skill. In the conversation tasks, participants interacted with a confederate (or confederates) trained to respond in a friendly but neutral fashion (e.g., interacting with, but not leading, the conversation). In the speech task, three confederates sat silently, looking polite but not being overly encouraging. Each task was introduced by the experimenter in an adjacent room, directing the assessment over an intercom. The three tasks included different types of social discourse and together, allowed for assessment of social skill across contexts. Beidel and colleagues (2010) provided complete psychometric information on all tasks.

First, the Simulated Social Interaction Test (SSIT; Curran, 1982) is a structured task that requires the participant to interact with a confederate in eight role-play scenarios. Each role-play lasted approximately 3 min. For each scene, the confederate had two standardized responses that were delivered (one at a time). Thus, the examiner read the scene, the confederate delivered a prompt, the participant responded, the confederate delivered a second prompt, and the participant responded. The participant interacted with a male confederate in four scenes, and interacted with a female confederate in another four scenes.

Second, there were two Unstructured Conversation Tasks (UCT; Turner, Beidel, Cooley, Woody, & Messer, 1994), one involving interaction with an opposite sex confederate (e.g., “pretend you are at a dinner party and get to know the person next to you”) and one with a same sex confederate (e.g., “you just moved into a new house and see your neighbor in the back yard”). Each scenario was 3 min long (6 min total), and counterbalanced on task type (i.e., dinner party or neighbor interaction) and sex of confederate (i.e., same sex or opposite sex confederate). Because the UCTs involved a general scenario, there were no specific confederate prompts. Confederates responded to the participant, but did not assume the burden of the conversation.

Third was the Impromptu Speech Task (IST). Participants delivered a 10 min impromptu speech using up to three topics (provided by the experimenter). The audience consisted of

three confederates. Participants were given 3 min to prepare their speech and allowed to terminate the speech after 3 min, by holding up a stop card, if they felt the stress of speaking was too great.

Independent observers' reports of social skills—We used the independent observers' ratings of social skills that were published previously (for rating and psychometric information, see Beidel et al., 2010). Specifically, assessments were videotaped and rated by independent raters unaware of diagnostic status. Raters were undergraduate students who were trained to criterion by a doctoral graduate student. Each SSIT interaction was rated for participant's degree of social skill using a 5-point Likert scale. Higher ratings reflected better skill. Ratings for social skills in positive interactions were examined separately from ratings in negative interactions. A similar rating strategy was used to take overall social skill ratings for the UCT and IST. As in prior research (Beidel et al., 2010; Jacobson & Truax, 1991), the four social skill ratings were dichotomized. Each participant was classified as to whether their social skills were two standard deviations below the sample mean (in this study, coded "1") versus not (in this study, coded "0"). As described below, we used these four dichotomous variables to construct analytic models of social skills performance across the behavioral tasks. The frequencies of participants coded as exhibiting social skills deficits are presented in Table 1.

Data-Analytic Plan

We first conducted preliminary analyses to detect deviations from normality. To test our first hypothesis, we computed within-and cross-informant correlations. We tested our second hypothesis by conducting exploratory latent class analyses (LCA; McCutcheon, 1987) on the four dichotomous observer reports of patients' social skills. Like cluster analysis, LCA identifies groups of cases based on similar patterns of indicator variables. Like confirmatory factor analysis, LCA tests the absolute and relative fit of models yielding indices such as the Bayesian Information Criterion (BIC) to examine whether a given model is a parsimonious solution to the data (relative to other model solutions), with lower scores indicating greater parsimony (Raftery, 1986, 1995). Latent class analysis uses categorical or ordinal variables to produce classes within which there is local independence of indicators (i.e., indicator variables are statistically independent within levels of each latent class). Thus, LCA is a person-centered approach that allowed us to identify classes of patients varying in expressions of social skills deficits across tasks. Probabilities provided by an LCA solution may be used to assess the confidence with which cases are assigned (McCutcheon, 1987). We tested one-through three-class solutions, and assessed model fit using each solution's BIC index, as well as the probabilities used to assign participants to classes.

We tested our third hypothesis by conducting exploratory latent profile analyses (LPA) on patient and clinician reports (Bartholomew, Steele, Moustaki, & Galbraith, 2002). Latent profile analysis focuses on continuous indicators; these procedures are a generalization of the LCA procedure used to model observer reports of patients' social skills, which uses categorical or ordinal variables (McCutcheon, 1987). We tested one-through five-class solutions, and assessed model fit using both BIC indices of the solutions and profile assignment probabilities.

We tested our fourth hypothesis by conducting two separate hierarchical logistic regression analyses. First, we entered SAD subtype as a nominal dependent variable. Independent variables included patient age, the CGI Severity of Illness score, the clinical severity rating of the primary diagnosis, Axis I comorbidity, presence of a major depression diagnosis, Axis II comorbidity, presence of an avoidant personality disorder diagnosis, and a variable representing latent profile assignments of patient–clinician reporting discrepancies. Second, we entered a variable representing latent class assignments of observers’ reports of patients’ social skills as a nominal dependent variable, and we entered as independent variables patient age, the CGI Severity of Illness score, the clinical severity rating of the primary diagnosis, Axis I comorbidity, presence of a major depression diagnosis, Axis II comorbidity, presence of an avoidant personality disorder diagnosis, and a variable representing latent profile assignments of patient–clinician reporting discrepancies. For both tests, we centered all continuous variables (patient age, CGI Severity of Illness score, and clinical severity rating of the primary diagnosis), and all nominal independent variables were coded either “0” or “1.”

Results

Preliminary Analyses

Frequency distributions for all continuous variables did not reveal any deviations from normality (see Table 1).

Hypothesis 1: Cross-Informant Correlations for Patient and Clinician Reports

There were moderate correlations *between* patient and clinician reports (mean $r = 0.43$; Cohen, 1988; see Table 2). In contrast, we observed large correlations *within* patient self-reports, as well as *within* clinician reports of patients (mean $r = 0.72$; Cohen, 1988). Correlations between reports completed by the same informant were larger than between-informant correlations, making these reports amendable to latent profile modeling of patient–clinician reporting discrepancies. In Table 2, we also report correlations between the patient and clinician reports and the indices of clinical severity used as covariates. Importantly, indices of clinical severity significantly correlated with *both* patient self-reports and clinician reports, providing further support for using these indices as covariates.

Hypothesis 2: Latent Classifications of Behavioral Observations of Patient Social Skills

Latent class analyses of observers’ reports of patients’ social skills revealed superior model fit for a two-class solution, BIC-(based on L^2) = -19.53 . This BIC was lower (i.e., more parsimonious a fit) than the BIC indices of the one- (BIC = 63.76) and three-class solutions (BIC = -2.2). We present the descriptive statistics of this model solution in Table 3. Broadly, patients in both classes exhibited a nonzero probability of exhibiting social skills deficits to some extent (i.e., at minimum, within specific tasks). Importantly, one class exhibited social skills deficits consistently across tasks, whereas the other class exhibited these deficits within some tasks and not others. Thus, our two-class solution consisted of participants who evidenced context-specific social skills deficits across tasks ($n = 127$; Context-Specific Social Skills Deficits), or social skills deficits across tasks ($n = 30$; Cross-Context Social

Skills Deficits). Importantly, the mean assignment probabilities for both classes were well above the 0.70 threshold recommended by Nagin (2006).

Hypothesis 3: Latent Profiles of Patient–Clinician Reporting Discrepancies

Latent profile analyses of patient–clinician reporting discrepancies revealed superior model fit for a four-class solution, BIC-(based on LL) = 4484.63. This BIC was lower (i.e., more parsimonious a fit) than the BIC indices of the three- (BIC = 4498.54) and five-class solutions (BIC = 4498.45). We present the descriptive statistics of this model solution in Table 4. The four-class solution consisted of patient–clinician dyads that varied in whether their reports concurred on the level of the patients’ symptoms. Specifically, three groups could be characterized by concordance on relatively high, ($n = 51$), relatively moderate ($n = 48$), or relatively low ($n = 28$) symptom levels across patient and clinician reports. A fourth group ($n = 30$) could be characterized by discordance between patient and clinician reports, in that patients reported relatively moderate symptom levels whereas clinicians reported relatively low symptom levels. In light of the similarities in both concordance between reports and relative symptom levels, we grouped the concordant-high and concordant-moderate profiles into a single group, and the concordant-low and discordant profiles into a second group. We refer to this variable below as “Latent Profiles of Patient–Clinician Reporting Discrepancies.” This variable consisted of a “Concordant on Relatively High Reports between Patient and Clinician” group ($n = 99$) and a “Not Concordant on Relatively High Reports between Patient and Clinician” group ($n = 58$). This was the key independent variable used in tests of Hypothesis 4 (see Tables 5 and 6).

Hypothesis 4a: Patient–Clinician Reporting Discrepancies and Diagnostic Status

Nominal logistic regression analyses of the relation between patient–clinician reporting discrepancies and diagnostic status are presented in Table 5. Of the control variables, only patient age (greater age related to decreased likelihood of a generalized subtype diagnosis) and the presence of an avoidant personality disorder diagnosis (presence of a diagnosis related to increased likelihood of a generalized subtype diagnosis) related to subtype. Consistent with our hypotheses, concordance between patient and clinician reports of patients’ high symptom levels related to an increased likelihood of the patient receiving a generalized subtype diagnosis, relative to a nongeneralized subtype diagnosis.

Hypothesis 4b: Patient–Clinician Reporting Discrepancies and Behavioral Observations

Nominal logistic regression analyses of the relation between patient–clinician reporting discrepancies and behavioral observations of patients’ social skills (i.e., context-specific social skills deficits vs. cross-context social skills deficits) are presented in Table 6. Of the control variables, none related to behavioral observations of patients’ social skills. Consistent with our hypotheses, concordance between patient and clinician reports of patients’ high symptom levels related to an increased likelihood of the patient consistently expressing social skills deficits across behavioral tasks, relative to expressing context-specific social skills deficits.

In tests of Hypotheses 4a and 4b, we did not observe significant effects of patients’ clinical severity in relation to diagnostic status nor behavioral observations (Tables 5 and 6).

Nevertheless, it was important to conduct an additional analysis to examine whether patients' clinical severity levels explained variance in patient–clinician discrepancies. Specifically, we entered the Latent Profiles of Patient–Clinician Reporting Discrepancies as a nominal dependent variable, and entered as independent variables patient age, the CGI Severity of Illness score, the clinical severity rating of the primary diagnosis, Axis I comorbidity, presence of a major depression diagnosis, Axis II comorbidity, and presence of an avoidant personality disorder diagnosis. Importantly, patient–clinician discrepancies evidenced nonsignificant relations with the CGI Severity of Illness score ($p > 0.45$) and the clinical severity rating of the primary diagnosis ($p > 0.35$).

Discussion

Main Findings

In a clinical assessment battery of adults that included multiple informants' reports, structured diagnostic interviews, and cross-contextual behavioral assessments, there were four main findings. First, we observed moderate correlations between patient and clinician reports of patients' symptoms. In fact, the mean correlation was nearly identical to the mean cross-informant correlation of internalizing psychopathology reported in a recent quantitative review (Achenbach et al., 2005). Second, latent class analyses identified two patterns of patients' performance on social skills tasks: (a) context-specific social skills deficits and (b) cross-context social skills deficits. Third, we could similarly characterize patients' self-reports by concordance versus discordance with clinicians' reports.

Fourth, we observed the ability of patient–clinician discrepancies to inform interpretations of SAD assessments. Specifically, patient–clinician concordance on relatively high levels of patients' symptoms increased the likelihood of the patient being diagnosed with generalized rather than nongeneralized SAD. Additionally, patient–clinician concordance on relatively high levels of patients' symptoms increased the likelihood of the patient expressing social skills deficits across social interaction tasks rather than within specific tasks. These findings are consistent with the OTM (De Los Reyes et al., 2013). Rather than signaling measurement error, discordance versus concordance between patient and clinician reports signaled inconsistent expressions of patients' social skills deficits across contexts. For some patients, laboratory measures indicated social skills deficits in some but not all settings, and patient and clinician reports reflected these variations. These observations met the expectations of findings as interpreted using the OTM's Diverging Operations concept (De Los Reyes et al., 2013).

We observed our main findings although accounting for other factors that might have explained the relations. First, relative to inconsistent symptom expressions across situations, consistent expressions may indicate greater clinical severity, although prior work across multiple symptom domains (e.g., attention and hyper-activity, antisocial and disruptive behavior, and social anxiety) does not consistently support this idea (cf. Bögels et al., 2010; De Los Reyes et al., 2009; Dirks et al., 2012). Importantly, our findings add to a growing body of research that indicates that cross-contextual variability in patients' behavior is *more* than simply a marker of clinical severity. Specifically, in tests of the main hypotheses (Tables 5 and 6), indices of clinical severity did not relate to contextual variability in

patients' behavior. Second, we previously reported that indices of clinical severity also did not significantly relate to measurements of patient–clinician reporting discrepancies. This is not to say that clinical severity *plays no role* in cross-contextual variability in patients' behavior, and no role in discrepancies between patient and clinician reports of patients' behavior. Instead, our data, and data from other research teams, indicates that clinical severity *does not completely explain* these behaviors. In sum, patterns of concordance and discrepancies between patient and clinician reports reflect contextual variations in patients' behavior.

Significance of Main Findings

This study expands the landscape within which researchers may find value in meaningfully interpreting discrepant outcomes in multi-informant assessments. Indeed, to our knowledge, this is the first investigation to demonstrate the ability of informant discrepancies to indicate cross-contextual variability in *adult* patients' behavior. Further, no previous study of patients of *any* developmental period has demonstrated the ability of informant discrepancies in SAD assessments to indicate cross-contextual behavioral variations. To date, such data exist only for reports of youth externalizing psychopathology (for a review see Dirks et al., 2012).

Limitations

There are limitations to the present study. First, we examined patient–clinician reporting discrepancies in relation to SAD subtypes. In addition to examining social skills, examining subtypes allowed us to test whether informant discrepancies could increase understanding of multi-informant adult assessments. Recent work indicates that SAD symptoms exist along a continuum (e.g., Aderka et al., 2012; El-Gabalawy et al., 2010; Ruscio, 2010). Importantly, we accounted for clinical severity both in overall clinical presentation and with regard to severity of the primary diagnosis. Thus, severity does not appear to account for our effects (Tables 5 and 6). Nevertheless, future research seeking to replicate and extend our findings should examine other clinical indices of SAD such as psychophysiological arousal during social tasks.

Second, we examined informant discrepancies in adult SAD assessments with a focus on patient and clinician reports, consistent with the majority of research in this area (Achenbach et al., 2005). These assessments render the report of one informant (the clinician) to systematically reflect, in part, the verbal report of patients' perspectives. As a result, we may have observed inflated levels of informant concordance, relative to reports between informants who may exhibit fundamentally different perspectives about patient functioning (e.g., self-report vs. parent, teacher, and partner reports; van der Ende et al., 2012). If this is true, it may be that one might gain a richer understanding of contextual variations by examining discrepancies among other informants' reports. Thus, future research should incorporate multiple informants' reports beyond those of patients and clinicians.

Third, our findings reflect informant discrepancies in adult SAD assessments. Historically, informant discrepancies have been interpreted as measurement error or informant bias. Our findings are in keeping with the idea that error or bias accounts for some, but not all of the variance in informant discrepancies (De Los Reyes, in press). That is, we observed a

statistically significant link between patient–clinician reporting discrepancies and variations in both SAD subtype and social skills deficits (Tables 5 and 6). Yet, although roughly one third of the sample presented with the nongeneralized subtype, a much larger percentage exhibited context-specific social skills deficits (see Table 3). Stated differently, patient–clinician reporting discrepancies are not completely accurate signals of contextual variations. To this end, discrepancies between informants’ reports will not always offer valuable behavioral information.

Research and Theoretical Implications

Consistent with research in youth (De Los Reyes, 2011), this study suggests that informant discrepancies can reflect contextual variability in manifestations of adult psychopathology. In line with these findings, future research should examine whether informant discrepancies provide meaningful insight into situational specificity in adult symptom expressions. Future work should examine whether informant discrepancies reveal symptom variations attributable to the specific demands of social situations. For example, consider a study in which patient and clinician reports disagree as to whether they evidence high symptom levels; that is, only patient reports reveal high symptom levels. Interpreting these discrepant assessment outcomes as yielding meaningful information might result in concluding that these findings indicate true differences in the extent of symptom expression within and across various contexts. For example, perhaps patient–clinician disagreement suggests that patients engage in social contexts that vary in contingencies that influence symptom expression (e.g., one-on-one social interactions but not group-based social interactions). Such insight might lead to improvements in the capacity for diagnostic assessments to inform treatment planning. That is, improved characterizations of patients’ behavior may translate in increased likelihoods that researchers and practitioners formulate treatment plans that specifically target behavioral variations in symptom expression (i.e., specific contexts for which symptom reduction may be particularly effective). Additionally, cross-contextual behavioral assessment paradigms as used in prior work (Beidel et al., 2010) might be used in future research as independent measures by which to examine whether informant-based discrepancies in reports reflect meaningful context-specific symptom expressions. The investigation of the clinical meaning of informant discrepancies within diagnostic formulation and treatment planning contexts may be particularly fruitful avenues for future research.

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Table 1

Descriptive Statistics of Main Study Variables and Clinical Covariates (n = 157)

Variable (Informant)	Descriptive statistics
Social Phobia and Anxiety Inventory total score (Patient) (<i>M</i> [<i>SD</i>])	95.30 (32.11)
Fear Questionnaire Social Phobia total score (Patient) (<i>M</i> [<i>SD</i>])	16.69 (7.29)
Hamilton Rating Scale for Anxiety (Clinician) (<i>M</i> [<i>SD</i>])	13.45 (8.34)
Hamilton Rating Scale for Depression (Clinician) (<i>M</i> [<i>SD</i>])	7.42 (5.60)
Impromptu Speech Task overall skill level (Observer) (<i>M</i> [<i>SD</i>])	3.38 (1)
Impromptu Speech Task overall skill level coded "deficit" (Observer) (Frequency [%])	24 (15.3%)
Simulated Social Interaction Test: Social skills in negative scenes (Observer) (<i>M</i> [<i>SD</i>])	3.50 (0.58)
Simulated Social Interaction Test: Social skills in negative scenes coded "deficit" (Observer) (Frequency [%])	23 (14.6%)
Simulated Social Interaction Test: Social skills in positive scenes (Observer) (<i>M</i> [<i>SD</i>])	3.31 (0.67)
Simulated Social Interaction Test: Social skills in positive scenes coded "deficit" (Observer) (Frequency [%])	25 (15.9%)
Unstructured Conversation Task overall skill level (Observer) (<i>M</i> [<i>SD</i>])	3.44 (0.75)
Unstructured Conversation Task overall skill level coded "deficit" (Observer) (Frequency [%])	25 (15.9)
Clinical Global Impressions Severity Scale (<i>M</i> [<i>SD</i>])	5.05 (0.89)
Clinical severity rating of patient's primary diagnosis (<i>M</i> [<i>SD</i>])	5.90 (1.13)
Presence of a comorbid Axis I diagnosis (Frequency [%])	44 (28%)
Presence of a major depression diagnosis (Frequency [%])	16 (10.2%)
Presence of a comorbid Axis II diagnosis (Frequency [%])	71 (45.2%)
Presence of an avoidant personality disorder diagnosis (Frequency [%])	63 (40.1%)

Note. Measures with informants described in parentheses are those measures used in latent classification models reported in Tables 3 and 4.

Table 2
Correlations Among Patient Self-Reports and Clinician Reports About Patients (n = 157)

Variable	1	2	3	4	5	6
1. Social Phobia and Anxiety Inventory total score (Patient)		0.64**	0.44**	0.49**	0.34**	0.32**
2. Fear Questionnaire Social Phobia total score (Patient)			0.46**	0.36**	0.30**	0.33**
3. Hamilton Rating Scale for Anxiety (Clinician)				0.80**	0.24*	0.31**
4. Hamilton Rating Scale for Depression (Clinician)					0.23*	0.26*
5. Clinical Global Impressions Severity Scale						0.65**
6. Clinical severity rating of the primary diagnosis						

Note. Measures with informants described in parentheses are those measures used in latent classification models reported in Tables 3 and 4.

* $p < 0.01$.

** $p < 0.001$.

Table 3

Latent Class Solution of Independent Observer Ratings of Patients' Expressions of Social Skills Deficits (n = 157)

Latent class	N	%	Mean assignment probability
Context-Specific Social Skills Deficits	127	80.9%	0.98
Cross-Context Social Skills Deficits	30	19.1%	0.94
Total	157	100%	0.97

<i>Conditional Probabilities for Measured Variables</i>		
<i>Measured variable</i>	<i>Latent classes</i>	
	<i>Context-specific social skills deficits</i>	<i>Cross-context social skills deficits</i>
Impromptu Speech Task: Overall skill level	Adequate social skills: 0.89	Adequate social skills: 0.11
	Social skills deficits: 0.31	Social skills deficits: 0.68
Simulated Social Interaction Test: Social skills in negative scenes	Adequate social skills: 0.91	Adequate social skills: 0.09
	Social skills deficits: 0.18	Social skills deficits: 0.81
Simulated Social Interaction Test: Social skills in positive scenes	Adequate social skills: 0.95	Adequate social skills: 0.05
	Social skills deficits: 0.02	Social skills deficits: 0.98
Unstructured Conversation Task: Overall skill level	Adequate social skills: 0.91	Adequate social skills: 0.08
	Social skills deficits: 0.21	Social skills deficits: 0.79

Note. Conditional probabilities are to be interpreted across the row of a given indicator and within each value, probabilities sum to 100% in each row.

Table 4
Latent Profile Solution of Patient-Clinician Reporting Discrepancies of Patients' Symptoms (n = 157)

Latent profile	N	%	Mean assignment probability
P+/C+: High	51	32.5%	0.92
P+/C+: Moderate	48	30.6%	0.90
P+/C-: Discordant	30	19.1%	0.87
P+/C+: Low	28	17.8%	0.95
Total	157	100%	0.91

Measured variable (Informant)	Conditional value	Latent profiles														
		P+/C+: High			P+/C+: Moderate			P+/C-:			P+/C+: Low					
		CP	Z	Z	CP	Z	Z	CP	Z	CP	Z	Z				
SPAI (Patient)	9-71.8 71.97-88.28 88.8-107.5 109.1-123 123.1-157.4	0	0.81	0.26	-0.12	0.16-	0.12	0.57	-1.14	0.28	0.16	0.06	0.05	0.03	0.51	-0.95
FQ-SP (Patient)	0-10 11-14 15-18 19-22 23-37	0	0.91	0.30	-0.39	0.18-	0.02	0.20	0.12	0.14	0.22	0.12	0.02	0.20	0.51	-0.95
HAMA (Clinician)	0-4 5-9 10-16 17-20 21-39	0	0.89	0.01	0.29	0.16-	0.76	0.82	-1.31	0.13	0.69	0.13	0	0.82	-1.31	-1.31
HAMD (Clinician)	0-1 2-5	0	0.93	0	0.17	0.13-	0.68	0.85	-1.28	0.24	0.68	0.02	0	0.85	-1.28	-1.28

Latent profile	N	%	Mean assignment probability
6-8	0.27	0.61	0
9-12	0.54	0.45	0
13-25	0.77	0.22	0

Note. $p+/C+$: High = Concordant on relatively high reports between patient and clinician; $p+/C+$: Moderate = Concordant on relatively moderate reports between patient and clinician; $p+/C-$ = Discordant reports between patient and clinician; $p+/C+$: Low = Concordant on relatively low reports between patient and clinician; Conditional probabilities are to be interpreted across the row of a given indicator and within each value, probabilities sum to 100% in each row. SPAI = Social Phobia and Anxiety Inventory; FQ-SP = Social Phobia subscale of the Fear Questionnaire; HAMA = Hamilton Rating Scale for Anxiety; HAMD = Hamilton Rating Scale for Depression. For each measure, we specify in parentheses the informant who completed the measure.

Table 5

Nominal Logistic Regression Predicting Patients' Diagnostic Status (Generalized Versus Nongeneralized Social Anxiety Disorder) as a Function of Latent Profiles of Patient-Clinician Informant Discrepancies (n = 157)

Variables	B (SE)	OR	95% CI	P
Patient age	-0.04 (0.02)	0.95	[0.91, 0.99]	$p < 0.05$
Clinical Global Impressions Severity Scale	0.84 (0.44)	2.32	[0.98, 5.50]	<i>ns</i>
Clinical severity rating of the primary diagnosis	-0.31 (0.33)	0.73	[0.38, 1.39]	<i>ns</i>
Presence of a comorbid Axis I diagnosis	0.82 (0.72)	2.28	[0.55, 9.35]	<i>ns</i>
Presence of a comorbid Axis II diagnosis	0.61 (1.08)	1.85	[0.22, 15.47]	<i>ns</i>
Presence of an avoidant personality disorder diagnosis	3.89 (1.47)	49.11	[2.73, 882.82]	$p < 0.01$
Latent Profiles of Patient-Clinician Reporting Discrepancies	3.14 (0.63)	23.17	[6.71, 79.95]	$p < 0.001$

Note. The variable "Presence of a major depression diagnosis" was originally included in the model. However, a possible quasi-complete separation in the data occurred with this model. Cross-tabulations between this variable and the dependent variable indicated that all 16 of the participants meeting criteria for major depression were located on one level of the dependent variable. Thus, we dropped the "Presence of a major depression diagnosis" variable from the regression. Importantly, our main findings were the same in both regression analyses. B = Unstandardized beta; SE = Standard error; OR = Odds Ratio; 95% CI = 95% confidence interval for odds ratio. Contrasts for nominal covariates were coded in the direction of absence of a diagnosis and then presence of a diagnosis. The contrast for the key independent variable (i.e., latent profile of patient-clinician reporting discrepancies) was tested as the likelihood of being in the "Concordant on relatively high reports between patient and clinician" profile group. The dependent variable was examined using the nongeneralized social anxiety disorder subtype group as the reference group (i.e., likelihoods reflect being in the generalized social anxiety disorder subtype group).

Table 6

Nominal Logistic Regression Predicting Independent Observers' Ratings of Patients' Social Skills (Context-Specific Social Skills Deficits Versus Cross-Context Social Skills Deficits) as a Function of Latent Profiles of Patient-Clinician Informant Discrepancies (n = 157)

Variables	B (SE)	OR	95% CI	P
Patient age	-0.01 (0.01)	0.98	[0.95, 1.02]	<i>ns</i>
Clinical Global Impressions Severity Scale	0.19 (0.35)	1.21	[0.60, 2.41]	<i>ns</i>
Clinical severity rating of the primary diagnosis	0.43 (0.31)	1.55	[0.84, 2.85]	<i>ns</i>
Presence of a comorbid Axis I diagnosis	-0.28 (0.56)	0.75	[0.24, 2.28]	<i>ns</i>
Presence of a major depression diagnosis	-1.14 (0.93)	0.32	[0.05, 1.98]	<i>ns</i>
Presence of a comorbid Axis II diagnosis	0.60 (0.49)	1.82	[0.69, 4.84]	<i>ns</i>
Latent Profiles of Patient-Clinician Reporting Discrepancies	1.36 (0.60)	3.89	[1.18, 12.78]	<i>p</i> < 0.05

Note. The variable "Presence of an avoidant personality disorder diagnosis" was originally included in the model. However, unexpected singularities in the Hessian matrix occurred with this model. Cross-tabulations between this variable and the dependent variable indicated that all but 10 of the 94 participants not meeting criteria for avoidant personality disorder were located on one level of the dependent variable. Thus, we dropped the "Presence of an avoidant personality disorder diagnosis" variable from the regression. Importantly, our main findings were the same in both regression analyses. B = Unstandardized beta; SE = Standard error; OR = Odds Ratio; 95% CI = 95% confidence interval for odds ratio. Contrasts for nominal covariates were coded in the direction of absence of a diagnosis ("0") and then presence of a diagnosis ("1"). The contrast for the key independent variable (i.e., latent profile of patient-clinician reporting discrepancies) was tested as the likelihood of being in the "Concordant on relatively high reports between patient and clinician" profile group. The dependent variable was examined using the latent class "Context-specific social skills deficits" as the reference group (i.e., likelihoods reflect being in the "Cross-context social skills deficits" latent class).