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ORIGINAL ARTICLE

Mother-Reported and Children's Perceived Social and Academic Competence in Clinic-Referred Youth: Unique Relations to Depression and/or Social Anxiety and the Role of Self-perceptions

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Abstract Depression and social anxiety symptoms and disorders are highly comorbid, and are associated with low social acceptance and academic competence. Theoretical models of both depression and social anxiety highlight the saliency of negative self-perceptions. We examined whether children's self-perceptions of social acceptance and mother-reported youth social acceptance are independently and uniquely related to children's depression and social anxiety, both before and after controlling for comorbid symptoms. Similar questions were examined regarding academic competence. The sample was 110 clinic-referred youth aged 8–16 years (65 boys, 45 girls; *M* age = 11.15, *SD* = 2.57). In the social acceptance area, both youth self-perceptions and mother-perceptions had independent and unique relations to depression *and* social anxiety, before and after controlling for comorbid symptoms. In the academic domain, both youth self-perceptions and mother-perceptions had independent and unique relations to depression, before and after controlling for social anxiety; yet *only* youth self-perceptions were related to social anxiety, before, but not after controlling for depression. For depression, larger effect sizes were observed for children's perceived, versus mother-reported, social acceptance and academic competence. Bootstrapping and Sobel tests found youth self-perceptions of social acceptance mediated the relation between mothers' perceptions and each of youth depression and social anxiety; and perceived academic competence mediated the relation between mothers' perceptions and youth depression, both before and after controlling for social anxiety. We found similarities and differences in findings for depression and social anxiety. Theoretical and treatment implications are highlighted, and future research directions are discussed.

Keywords Children's depression · Children's social anxiety · Self-perceptions · Social competence · Social acceptance · Academic competence

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Introduction

Depression and social anxiety are common symptoms and disorders that often begin in childhood [1–3]. In addition, subthreshold symptoms of depression and social anxiety have similar correlates as the clinical disorders [2]. Depression and anxiety symptoms and disorders also tend to co-occur [4]. This is especially true for the comorbidity of depression and social anxiety in particular, both for symptoms and disorders of depression and social anxiety [4–7].

As described below, theoretical models of depression and theoretical models of social anxiety highlight the saliency of negative self-perceptions. Moreover, as reviewed elsewhere [2] and described below, *both* children's depression and social anxiety are related to their social competence and social acceptance, as well as academic performance problems; with a separate body of literature focusing on depression, and another body of literature on social anxiety. The current study integrates these seemingly separate theoretical and empirical foundations, while considering comorbidity, by examining the independent and unique relations of children's perceived competence (in social and academic domains) and mother-reported youth competence (in social and academic domains) with children's depression and social anxiety, both before and after controlling for comorbid symptoms. Moreover, we explore whether children's self-

perceptions mediate the relation between mother-reported competence and children's depression and/or social anxiety. In addition to theoretical implications, if children's self-perceptions are more robustly related to children's symptoms relative to mothers' perceptions, and/or if children's self-perceptions mediate or explain the relation or link between competence and children's depression and social anxiety, these findings and conceptualizations may warrant children's self-perceptions of competence to be considered as possibly mediating treatment outcome for depression and/or social anxiety. This notion may apply even when children's cognitions and/or self-perceptions are *not* a specific target in treatment, such as in interpersonal therapy for depression [8, 9], or social effectiveness therapy for social anxiety [10].

Depression

Social and academic competence and/or competence-related cognitions (perceived competence, self-efficacy beliefs) are key components in numerous theoretical models of depression [11–14]. In the dual failure model, academic failure and social rejection by peers leads to depression [11]. Self-efficacy beliefs play a core role in social cognitive theory of depression [12], and in Beck's cognitive theory of depression, negative self-schemas involving themes of failure, worthlessness, and rejection play a prominent role [13]. Cole's competency-based model of youth depression posits that others' perceptions of children's competence in social and academic areas (as well as other areas) are translated into feedback to the child. This feedback affects children's self-perceptions, and if negative, places children at risk for depression [14–16]. In this model, children's perceived competence mediates the relation between other-reported children's competence and children's depression. As reviewed by Jacquez et al. [16], numerous studies from Cole's lab (and other researchers) have documented much support for the model. However, they note that previous studies have focused on others' appraisals or reports of children's competence, presuming that others' appraisals are communicated to the child in the form of feedback, and they have not assessed competency-based feedback per se. Their study is one exception, and they found that adolescents' global perceived competence across many areas mediated the relation between maternal criticism (both mother and adolescent reported) and more negative (relative to positive) observed maternal feedback with adolescents' depressive symptoms [16]. The current study incorporates aspects of many of these theories of youth depression by examining *both* youth-perceived and mother-reported youth academic competence and social acceptance in a clinic-referred sample, and extends this area of research by considering the role of social anxiety.

Indeed, consistent with the above theoretical notions, empirical studies have found children's depression is associated with low peer acceptance (and social competence) and academic problems, as reported by others and/or more objective indices. In addition, depression is also associated with negative self-perceptions of competence in the social and academic domains. For example, regarding self-perceptions, children's depression has been found to be related to low levels of perceived social acceptance and academic competence, low levels of social and academic self-efficacy beliefs, negative conceptions of the self and relationships, low friendship quantity and quality, and low perceived social support from classmates and friends [17–22]. Regarding the academic domain, in nonclinical, community, and school samples of children, depressive symptoms have been found to be associated with lower mother-, father-, teacher-, and peer-reported children's academic competence or academic performance [15, 23, 24]; lower scores on standardized achievement tests [25, 26]; lower grade point averages [26, 27]; and dropping out of school [28]. However, none of these studies considered the role of comorbid social anxiety.

Saliency of Self-perceptions and Their Potential Mediating Role

Consistent with numerous theoretical models of depression highlighting the primary role of negative self-perceptions, empirical findings also suggest that children's self-perceptions are more saliently related to their depression than more objective indices of social acceptance and academic competence. For example, 4th and 5th grade children's perceived social acceptance and not actual peer acceptance predicted depression 7 years later [29]. Sixth grade students' perceived academic self-efficacy and not their actual academic achievement has been found to be related to depression concurrently and 1 year later; and their perceived social efficacy predicted depression 2 years later [12]. Using self-report questionnaires, 8–12-year-old children's perceived social acceptance and academic competence was related to depression after controlling for mother- or father-reported children's social acceptance and academic competence [23]. Decreases in children's perceived social acceptance and academic competence over 2 years predicted increases in later depression after controlling for teacher-rated social acceptance and academic competence [30].

Previous research also indicates that in school-based samples, youth perceived academic competence mediates the relation between their academic competence and depression. For example, self-perceptions have been found to play a mediating role regarding academic performance (GPA, achievement tests) in cross sectional studies [26],

and in dropping out of school in later adolescence in prospective studies [28]. Moreover, consistent with competency-based model of depression, in 9–13-year old students, the relation between peer dislike (i.e., peer acceptance) and children's depression was mediated by children's perceived social acceptance [22]. Moreover, Cole et al. [15] study of 3rd and 6th graders found children's self-perceptions of social acceptance and academic competence mediated the relation between others' (parent, teacher, and peer) reports of children's social acceptance and academic competence and children's depression 6 months later. Thus, children's perceived competence mediates the relation between other indices of competence and youth depression. However, none of these studies were on clinic-referred samples, which, relative to school-based or community samples likely exhibit more depression symptoms as well as more problems in the social and academic domains. As such, the current study will shed light on if past findings generalize to, or are more robust in, clinic-referred youth. Perhaps more important, none of these studies considered comorbid social anxiety, which we incorporate in the current study, and examine the independent and unique relations of children's perceived competence (in social and academic domains) and mother-reported youth competence (in social and academic domains) with children's depression and social anxiety, both before and after controlling for comorbid symptoms. By incorporating social anxiety, our secondary aim is to examine the applicability of, and specificity of, the competency-based model to youth depression and/or social anxiety in a clinic-referred sample, before and after controlling for comorbid symptoms.

Social Anxiety

Competence and competence-related cognitions are also prominent in theoretical models of social anxiety, more so than other types of anxiety [31–34]. In particular, cognitive and interpersonal theories of social anxiety have stressed the importance of negative self-perceptions in the etiology and maintenance of social anxiety [35, 36]. Moscovitch [37] argues on empirical and conceptual grounds that individuals with social anxiety "are uniquely and primarily concerned about *characteristics of the self that they perceive as being deficient or contrary to perceived societal expectations or norms*" (p. 125). Theoretically, negative self-perceptions are at the core of both depression and social anxiety. Thus, similar to depression, children's perceived competence is likely to be more salient than are others' perceptions of competence in children's social anxiety, and children's perceived competence may be the mechanism linking the relation between children's academic and social competence and their social anxiety.

Indeed, consistent with the above theoretical notions, and similar to depression, social anxiety is also associated with low peer acceptance (and social competence) and academic problems, as reported by others and/or more objective indices. In addition, as with depression, social anxiety is associated with negative self-perceptions of competence in the social and academic domains. For example, regarding self-perceptions, studies have found children's social anxiety is related to low levels of perceived social acceptance, low social self-efficacy, negative perceptions of the quality of close friendships, and perceiving low social support from friends and classmates [38–42]. Socially anxious and social phobic children also report lower self-perceptions of their academic competence than control groups [43, 44]. In the social domain, social anxiety is also related to rejected peer social status [40], as well as social skill, social competence, and performance deficits relative to control groups as judged by independent observers, other informants, and/or behavioral observations [45–47]. In addition, children's social anxiety is also related to their peer- and parent-rated social acceptance [48, 49].

Children's social anxiety has also been found to be associated with an array of academic performance problems. For example, sixth grade children's social anxiety is associated with lower grade point averages [50], and adolescents with social phobia and subclinical social phobia were found to have lower grade point averages than adolescents with no disorders [51]. In addition, symptom severity in 7–10-year old children with social phobia, and not other anxiety disorders, was related to teacher-reported learning problems [52]. Furthermore, 83 % of adults with social phobia have been found to retrospectively report their social fears impaired their academic and school functioning [53].

Despite these findings, as with the research previously described on depression, none of the studies above on social anxiety considered the role of comorbid depression. Moreover, we are unaware of any studies that have examined the unique and independent relations of children's perceived competence and other-rated competence to children's social anxiety, or whether children's self-perceptions of competence mediates the relations between others' perceptions of children's competence and children's social anxiety. However, a cross sectional study found children's perceived competence in diverse areas mediated the relation between child-reported maternal overprotection/control and their self-reported social anxiety [54]. The authors noted that overcontrolling parental behaviors "may communicate to youths that they do not have the skills to successfully navigate challenges in their environment" [54, p. 108], and hence this conceptualization parallels a potential linkage between maternal

competency-related feedback and social anxiety. However, the role of children's depression was not considered in this study.

Depression *and* Social Anxiety and the Present Study

Negative self perceptions, theoretically and empirically, are related to children's depression and social anxiety. However, only a few studies have examined *both* depression and social anxiety in relation to self-perceptions. In 14–15-year-old schoolchildren, and in college undergraduate students, perceived academic competence and social acceptance were related to both depression and social anxiety [55, 56]. Also, 12–19-year old youth's social and academic self-efficacy have been found to be related to both depression and social anxiety [57]. However, after controlling for comorbid symptoms: (1) only perceived social acceptance was related to youth social anxiety and only perceived academic competence was related to youth depression [55]; (2) perceived social acceptance *and* academic competence predicted changes in college students' depression over 6 months, whereas *only* perceived social acceptance did so for social anxiety [56]; and (3) social self-efficacy was related to social anxiety and not depression, and academic self-efficacy was related to depression and not social anxiety [57]. These findings on social anxiety dovetail with studies that found preadolescent and adolescent girls' perceived social acceptance was related to social anxiety after controlling for depression, but not related to depression after controlling for social anxiety [48, 58].

Bringing these areas of research together, the current study extends past research and examines in a clinic-referred sample of youth, whether: (1) children's perceived social acceptance and mother-reported youth social acceptance are independently and uniquely related to children's depression and social anxiety, both before and after controlling for comorbid symptoms; and (2) children's perceived academic competence and mother-reported youth academic competence are independently and uniquely related to children's depression and social anxiety, both before and after controlling for comorbid symptoms. Based on the above theoretical and empirical foundations, we anticipated self-perceptions to be more robustly related to children's depression and social anxiety relative to mothers' perceptions, and we anticipated that after controlling for depression, the findings for social anxiety and academic competence might be less robust [55, 56].

Although our study is cross sectional, we also explore whether children's self-perceptions mediate the relation between mother-reported children's competence and children's depression and social anxiety, both before and after controlling for comorbid symptoms. Importantly, we also considered that, theoretically and empirically, self-perceptions and cognitions regarding the self become increasingly more stable from early elementary school years, through middle childhood, and then into adolescence [59–61]; and the magnitude or strength in the association between children's self-perceptions and others' appraisals of their social acceptance and academic competence increases as children grow older [59, 62]. Given the above, we explored whether age moderated our question regarding self-perceptions mediating the relation between mother-reported competence and youth depression and social anxiety.

Methods

Participants

Participants were 110 children aged 8–16 years (65 boys, 45 girls; M age = 11.15, SD = 2.57) and their mother, consecutively referred to an outpatient community-based clinic for assessment and/or treatment for various school-related, family-related, behavioral, or emotional problems. Father- and teacher-reports were also collected but for many youth these data were unavailable; therefore, the sample is based on all youth for whom mother-reports were obtained. Ethnicity of the children was 71 % Caucasian, 26 % Hispanic, 2 % African American, and 1 % other or mixed ethnicity. Hollingshead's [63] four factor index of socioeconomic status (SES), which is based on parents' education and occupation, ranges from 8 to 66. In this sample (M = 36.45, SD = 9.97) families fell into Levels I (6 %), II (18 %), III (41 %), IV (32 %), and V (3 %), indicating mostly middle SES with all levels represented.

DSM structured diagnostic interviews were not conducted as part of this study. However, diagnoses by history were obtained from the clients' charts which indicated that 10 % had no diagnoses, 45 % had one diagnosis, and 45 % had two or more diagnoses. Moreover, 50 % had internalizing disorders (19 % major depression, 23 % dysthymic disorder; 16 % anxiety disorders); 44 % had externalizing disorders (10 % conduct disorder, 21 % ODD; 18 % ADHD); 22 % had adjustment disorders; and 7 % had learning disorders.

Child-Report Measures

Social Anxiety Scale for Children-Revised (SASC-R)

The SASC-R [40] is a 22-item self-report measure that has 18 items (and 4 filler items) rated on a 5-point Likert scale ranging from 1 (not at all) to 5 (all the time) (e.g., I am quiet when I am with a group of kids). The items fall on subscales that reflect three aspects of social anxiety: fear of negative evaluation, social avoidance and distress specific to new

situations and unfamiliar peers, and social avoidance and distress in general. Good internal consistency and test–retest reliabilities, as well as convergent, discriminant, and predictive validity have been documented [40, 64, 65]. The total social anxiety score was used in this study and it had good internal consistency ($\alpha = .91$).

Children's Depression Inventory (CDI)

The CDI [66] is a 27-item self-report measure that assesses the affective, cognitive, behavioral, and somatic symptoms of depression in youth. Each item contains three response options (e.g., I am sad once in a while, I am sad many days, I am sad all the time). The CDI is a commonly-used measure with well established psychometric properties [66], and the CDI has been found to discriminate depressive disorders from anxiety and disruptive behavior disorders [67]. Internal consistency in this sample was good ($\alpha = .90$).

Self-perception Profile for Children (SPPC)

Children's perceived social acceptance and academic competence were assessed with those respective subscales on the SPPC [68]. Items are rated on a 4-point scale, with higher scores indicating more positive self-perceptions. Satisfactory internal consistencies, test–retest reliabilities, and factor structure has been documented, as well as concurrent and criterion validity [68, 69]. The internal consistencies of the social and academic subscales in this sample were acceptable (αs = .74 and .80, respectively).

Parent-Report Measures

Child Behavior Checklist (CBCL)

The CBCL [70] is completed by parents and it assesses children's behavioral and emotional problems. Extensive data support the psychometric characteristics of the CBCL, and the Internalizing and Externalizing scales that were used in this study [70]. For example, good test–retest and internal consistency reliabilities have been demonstrated (*r*s ranging from .91 to .92, and αs ranging from .90 to .94) [70].

Social Anxiety Scale for Children-Revised/Parent Version (SASC-R/Parent)

The SASC-R/Parent [40] was developed to parallel the SASC-R and parents rate the child's behavior on the same items that are contained on the child SASC-R. Confirmatory factor analyses have indicated the same 3-factor structure on the SASC-R/parent that has been documented on the SASC-R; and it generalized across older and younger children and across girls and boys [71]. Internal consistencies (.94 mothers and .93 fathers), as well as convergent and criterion validity have been reported in large samples of youth [72]. The total score in this study had $\alpha = .94$.

Parent Rating Form (PRF)

The PRF depression scale [73] is a 26-item scale created to be equivalent to the content of each item from the CDI (with the suicidal ideation item omitted). For each item (e.g., Often looks or feels sad or unhappy), the parent rates how well it describes his or her child on a seven-point scale ranging from 1 (does not describe your child at all) to 7 (describes your child perfectly). In inpatient and elementary school samples of youth, the PRF depression scale has been found to have good internal consistency ($\alpha = .91$), and to be significantly related to children's self-reported depression on the CDI ($r = .38$) and teacher-reported children's depression ($r = .50$) [73]. Internal consistency of the PRF depression scale in this sample was good ($\alpha = .92$).

Parent Rating Scale of Child's Actual Behavior (PRS)

The PRS [68] parallels the SPPC, and assesses parent's perceptions of children's social and academic competence. Higher scores reflect more positive perceptions of children's competence. Test–retest reliabilities, internal consistency (.80–.89), and convergent and discriminant validity have been demonstrated [15]. The internal consistencies of the social and academic subscales in the current sample were .85 and .79, respectively.

Procedures

After gaining IRB approval, written informed consent was obtained from parents, for their own and their child's participation. The children's verbal and written informed assent was also obtained. Participants were told that the study would be examining children's and parent's thoughts, feelings, and behaviors and that their responses would be confidential. Individual data collection visits were arranged for each dyad, where parent and child independently completed randomly ordered measures in separate rooms. Data collection was within 3 weeks of the initial clinic intake and families received a discount on clinic services for their participation.

Results

Preliminary Analyses

Distributions of (*M*, *SD*, skewness and kurtosis), as well as correlations among, all study measures are shown in

Table 1 Distributions of, and correlations among, study measures (N = 110)

Measure	1	2	3	4	5	6	7	8	9	10
1. Youth-reported depression										
2. Youth-reported social anxiety	.50***									
3. Mother-reported youth depression	.31***	.43***								
4. Mother-reported youth social anxiety	.13	.30***	.50***							
5. Perceived social acceptance	−.49***	−.49***	−.35***	−.29***						
6. Perceived academic competence	−.57***	−.49***	−.36***	−.15	.49***					
7. Mother-reported social acceptance	−.28***	−.25**	−.44***	−.50***	.40***	.09				
8. Mother-reported academic competence	−.28***	−.19*	−.29***	−.03	.21**	.41***	.13			
9. Depression composite	.81***	.57***	.81***	.39***	−.52***	−.57***	−.45***	−.35***		
10. Social anxiety composite	.39***	.81***	.58***	.81***	−.48***	−.39***	−.46***	−.14	.60***	
M	12.63	44.21	67.25	43.32	17.86	16.78	8.84	8.31	−.01	.00
SD	9.27	16.55	27.20	13.32	4.38	4.81	2.62	2.53	1.62	1.61
Skewness	.752	.373	.863	.269	−.749	−.346	−.621	−.048	.648	.440
Kurtosis	.126	−.436	.089	−.078	.401	−.460	−.518	−1.03	−.198	.161

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

Table 1. As seen in Table 1, mother-reported youth depression was related to youth self-reported depression, and mother-reported youth social anxiety was related to youth self-reported social anxiety ($rs = .31$ and .30, respectively, both $p < .001$). A composite score, combining youth and mother reports (after each was standardized) was created for each of children's depression and social anxiety, and were used in all analyses. Correlations between the depression and social anxiety composites with other study variables are also shown in Table 1. Of note, all relations were significant (all $p < .001$) with one exception: the social anxiety composite was not related to mother-reported youth academic competence.

The CBCL was administered for descriptive purposes, and mothers' reports of Internalizing and Externalizing problems in their children had a Mean *T* score of about 63 ($Ms = 63.36$ and 62.95, and $SDs = 10.03$ and 11.03, respectively) which is the cutoff for clinically significant problems on these scales (above the 90th percentile for youth age and sex) [70]. Regarding children's depressive symptoms on the CDI, a cutoff of 16 has been shown to have an optimal relation between sensitivity and specificity with regards to depression disorders on structured interviews [68]. In the current sample, 37 youth (34 %) exceeded this cutoff. The clinical cutoffs for high social anxiety on the SASC-R are a total score at or above 54 (for girls) or 50 (for boys) [40]. In the current sample, 14 (31 %) of girls and 21 (32 %) of boys self-reported clinically significant levels of social anxiety.

Correlations and *t* tests examined whether the study variables were related to youth age, sex, ethnicity (Caucasian vs. non-Caucasian) and family SES. None of the study measures, including depression and social anxiety composites, were significantly related to youth age (all $p > .08$), sex (all $p > .14$), ethnicity (all $p > .14$), or family SES (all $p > .08$). Nevertheless, given our wide age range of youth, and findings that show children's self-perceptions become more stable and correspondence between children's self-perceptions and others' perceptions of children's competence becomes stronger as a function of age [59], we controlled for youth age in all main analyses.

Main Analyses

Hierarchical multiple regression analyses (in IBM SPSS Statistics Version 22) were conducted to examine the independent and unique or specific relations of children's perceived and mother-reported (examined simultaneously) social acceptance and academic competence to children's depressive and social anxiety symptoms (based on a composite of child- and mother-reported symptoms), both before and after controlling for comorbid symptoms. Statistical significance was examined (i.e., with alpha and $p < .05$) and effect sizes are reported regarding the magnitude of unique relations; with sr^2 of .01, .09, and .25 indicating small, medium, and large effect sizes, respectively [74].

Social Acceptance

Depression

After entering children's age in step one, when considered together in step two, children's perceived and mother-reported social acceptance were related to children's depressive symptoms ($R^2 = .35$, $\Delta R^2 = .35$, $\Delta F = 27.79$, $p < .001$), with *both* children's perceived ($\beta = -.40$, $p < .001$) and mother-reported ($\beta = -.31$, $p = .001$) social acceptance independently related to children's depression. Children's perceived social acceptance showed a significant relation to children's depression when the variance attributed to other variables (children's age and mother-reported social acceptance) was partialed out ($sr = -.37$, $sr^2 = .14$, a medium to large effect size). Mother-reported children's social acceptance also showed a significant relation to children's depression when the variance attributed to other variables (children's age and children's perceived social acceptance) was partialed out ($sr = -.28$, $sr^2 = .08$, a small to medium effect size). Here, somewhat larger effect sizes were observed for children's perceived social acceptance.

After entering children's age as well as their social anxiety symptoms in step 1 ($R^2 = .37$, $\Delta R^2 = .37$, $\Delta F = 29.95$, $p < .001$), when considered together in step two children's perceived and mother-reported social acceptance were related to depression ($R^2 = .46$, $\Delta R^2 = .09$, $\Delta F = 8.61$, $p < .001$). Here, after controlling for social anxiety *both* children's perceived ($\beta = -.26$, $p < .01$) and mother-reported ($\beta = -.17$, $p < .05$) social acceptance remained independently related to children's depression. Children's perceived social acceptance showed a unique and specific relation to depression when the variance attributed to other variables (children's age, social anxiety, and mother-reported children's social acceptance) was partialed out ($sr = -.23$, $sr^2 = .05$, a small to medium effect size). Mother-reported children's social acceptance also showed a unique and specific relation to depression when the variance attributed to other variables (children's age, social anxiety, and perceived social acceptance) was partialed out ($sr = -.15$, $sr^2 = .02$, a small effect size). Moreover, children's social anxiety showed a unique and specific relation to depression when the variance attributed to other variables (children's age, and children's perceived and mother-reported social acceptance) was partialed out ($sr = .33$, $sr^2 = .11$, a medium effect size). Thus, children's perceived and mother-reported social acceptance and children's social anxiety each showed unique and specific relations to children's depression, with somewhat larger effect sizes observed for children's perceived, versus mother-reported, social acceptance.

Social Anxiety

After entering children's age in step one, when considered together in step two, children's perceived and mother-reported social acceptance were related to children's social anxiety ($R^2 = .33$, $\Delta R^2 = .32$, $\Delta F = 24.33$, $p < .001$), with *both* children's perceived ($\beta = -.35$, $p < .001$) and mother-reported ($\beta = -.33$, $p = .001$) social acceptance independently related to children's social anxiety. Children's perceived social acceptance showed a significant relation to children's social anxiety when variance attributed to other variables (children's age and mother-reported social acceptance) was partialed out ($sr = -.32$, $sr^2 = .10$, a medium effect size). Children's mother-reported social acceptance also showed a significant relation to children's social anxiety when variance attributed to other variables (children's age and perceived social acceptance) was partialed out ($sr = -.30$, $sr^2 = .09$, a medium effect size).

After entering children's age as well as their depression symptoms in step 1 ($R^2 = .37$, $\Delta R^2 = .37$, $\Delta F = 30.76$, $p < .001$), when considered together in step two children's perceived and mother-reported social acceptance were related to children's social anxiety ($R^2 = .44$, $\Delta R^2 = .07$, $\Delta F = 6.19$, $p < .01$). After controlling for depression, *both* children's perceived ($\beta = -.18$, $p < .05$) and mother-reported ($\beta = -.20$, $p < .05$) social acceptance remained independently related to children's social anxiety. Children's perceived social acceptance showed a unique and specific relation to social anxiety when the variance attributed to other variables (children's age, depression, and mother-reported children's social acceptance) was partialed out ($sr = -.16$, $sr^2 = .03$, a small effect size). Mother-reported children's social acceptance also showed a unique and specific relation to children's social anxiety when the variance attributed to other variables (children's age, depression, and perceived social acceptance) was partialed out ($sr = -.18$, $sr^2 = .03$, a small effect size). Moreover, children's depression showed a unique and specific relation to their social anxiety when the variance attributed to other variables (children's age, and children's perceived and mother-reported social acceptance) was partialed out ($sr = .33$, $sr^2 = .11$, a medium effect size). Thus, children's perceived and mother-reported social acceptance and children's depression each showed unique and specific relations to children's social anxiety.

Academic Competence

Depression

After entering children's age in step one, when considered together in step two, children's perceived and mother-reported academic competence were related to children's

depression ($R^2 = .35$, $\Delta R^2 = .35$, $\Delta F = 27.56$, $p < .001$), with *both* children's perceived ($\beta = -.50$, $p < .001$) and mother-reported ($\beta = -.17$, $p < .05$) academic competence independently related to depression. Children's perceived academic competence showed a significant relation to their depression when the variance attributed to other variables (children's age and mother-reported academic competence) was partialed out ($sr = -.45$, $sr^2 = .20$, a medium to large effect size). Mother-reported academic competence also showed a significant relation to children's depression when the variance attributed to other variables (children's age and children's perceived academic competence) was partialed out ($sr = -.16$, $sr^2 = .03$, a small effect size). Here, larger effect sizes were observed for children's perceived, versus mother-reported, academic competence.

After entering children's age as well as their social anxiety in step 1 ($R^2 = .37$, $\Delta R^2 = .37$, $\Delta F = 29.95$, $p < .001$), when considered together in step two children's perceived and mother-reported academic competence were related to depression ($R^2 = .52$, $\Delta R^2 = .16$, $\Delta F = 16.58$, $p < .001$). Here, after controlling for social anxiety *both* children's perceived ($\beta = -.31$, $p < .001$) and mother-reported ($\beta = -.18$, $p < .05$) academic competence remained independently related to children's depression. Children's perceived academic competence showed a unique and specific relation to depression when the variance attributed to other variables (children's age, social anxiety, and mother-reported academic competence) was partialed out ($sr = -.26$, $sr^2 = .07$, a small to medium effect size). Mother-reported children's academic competence also showed a unique and specific relation to depression when the variance attributed to other variables (children's age, social anxiety, and perceived academic competence) was partialed out ($sr = -.17$, $sr^2 = .03$, a small effect size). Moreover, children's social anxiety showed a unique and specific relation to depression when the variance attributed to other variables (children's age, and children's perceived and mother-reported academic competence) was partialed out ($sr = .42$, $sr^2 = .18$, a medium to large effect size). Thus, children's perceived and mother-reported academic competence and children's social anxiety each showed unique and specific relations to children's depression, with somewhat larger effect sizes observed for children's perceived, versus mother-rated, children's academic competence.

Social Anxiety

After entering children's age in step one, when considered together in step two, children's perceived and mother-reported academic competence were related to children's social anxiety ($R^2 = .17$, $\Delta R^2 = .16$, $\Delta F = 10.15$, $p < .001$), yet *only* children's perceived ($\beta = -.42$, $p < .001$) and not mother-reported ($\beta = .04$) academic competence was related to children's social anxiety. Children's perceived academic competence showed a significant relation to children's social anxiety when the variance attributed to other variables (children's age and mother-reported academic competence) was partialed out ($sr = -.38$, $sr^2 = .14$, a medium to large effect size).

After entering children's age as well as their depression symptoms in step 1 ($R^2 = .37$, $\Delta R^2 = .37$, $\Delta F = 30.76$, $p < .001$), when considered together in step two children's perceived and mother-reported social acceptance were no longer related to children's social anxiety ($R^2 = .40$, $\Delta R^2 = .02$, $\Delta F = 1.72$, $p = .18$) with neither children's perceived ($\beta = -.13$) nor mother-reported ($\beta = .13$) academic competence related to children's social anxiety (both sr^2s = .01). Children's depression, however, showed a unique and specific relation to their social anxiety when the variance attributed to other variables (children's age, and children's perceived and mother-reported academic competence) was partialed out ($sr = .47$, $sr^2 = .22$, a large effect size).

Supplemental Analyses

We explored whether children's self-perceptions mediate the relation between mother-reported competence and children's depression and/or social anxiety. Nonparametric bootstrapping procedures were used to examine mediation, as they provide a robust way to examine indirect effects [75, 76] even if total effects are not significantly different from zero [77, 78]. In all analyses, 10,000 bootstrapped samples were obtained, and 95 % bias-corrected bootstrap confidence intervals (CI) were examined as these are the most powerful tests given sample sizes similar to ours [79]. We also report Sobel z test statistics for the indirect effects to supplement the bootstrap results. Data were analyzed in SPSS using the PROCESS macro for bootstrapping mediation analysis [80].

Social Acceptance

Regarding youth depression (composite), as seen in Table 2, after controlling for youth age, the total effect, and the direct effect, of mothers' report of youth social acceptance on youth depression were significant (both $p < .001$). The indirect effect of mothers' report of youth social acceptance on youth depression through youth perceived social acceptance did not contain zero, indicating youth self-perceptions of social acceptance mediated the relation between mothers' reports of youth social acceptance and youth depression. Findings were less robust after *also* controlling for youth's social anxiety composite (see

Table 2 Effects of mothers' reports of youth social acceptance on youth depression and social anxiety through youth self-perceptions of social acceptance (N = 110)

	Total effect	Direct effect	Indirect effect through youth self-perception of social acceptance		
	c (*SE*)	c′ (*SE*)	ab (SE)	z	CI_{95}
Youth depression (composite) as dependent variable					
M-report youth social acceptance[a]	−.29 (.05)***	−.19 (.05)***	−.10 (.04)	−3.13**	[−.186, −.040]
M-report youth social acceptance[c]	−14 (.05)**	−.11 (.05)*	−.03 (.02)	−1.74	[−.099, −.001]
Youth social anxiety (composite) as dependent variable					
M-report youth social acceptance[a]	−.29 (.05)***	−.21 (.05)***	−.09 (.03)	−2.89**	[−.171, −.030]
M-report youth social acceptance[b]	−.15 (.05)**	−.13 (.05)**	−.02 (.02)	−1.37	[−.076, .000]

c, c′, and ab = unstandardized regression coefficients as denoted; z = Sobel test statistic; CI_{95} = 95 % bias-corrected bootstrap confidence intervals; CI's not containing zero are significant at $p < .05$

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

[a] Controlling for youth age

[b] Controlling for youth age and depression composite

[c] Controlling for youth age and social anxiety composite

Table 2). Here, the total effect was significant ($p < .01$), as was the direct effect ($p < .05$), and the indirect effect did not contain zero [−.099, −.001] yet the sobel test was nonsignificant. Thus, after controlling for social anxiety, youth self-perceptions did not appear to mediate the relation between mothers' reports of youth social acceptance and youth depression.

Regarding youth social anxiety (composite), as seen in Table 2, after controlling for youth age both the total effect and the direct effect of mothers' report of youth social acceptance on youth social anxiety were significant (both $p < .001$). The indirect effect of mothers' report of youth social acceptance on youth social anxiety through youth perceived social acceptance did not contain zero, indicating youth perceived social acceptance mediated the relation between mothers' reports of youth social acceptance and youth social anxiety. After *also* controlling for youth's depression, although the total and direct effect remained significant (see Table 2), the indirect effect did contain zero and the sobel test was nonsignificant. Thus, after controlling for depression, youth self-perceptions did not mediate the relation between mothers' reports of youth social acceptance and youth social anxiety.

Academic Competence

Regarding youth depression, as seen in Table 3, after controlling for youth age, both the total and direct effects of mothers' report of youth academic competence on youth depression were significant. The indirect effect of mothers' report of youth academic competence on youth depression through youth perceived academic competence did not contain zero, indicating youth perceived academic competence mediated the relation between mothers' reports of youth academic competence and youth depression. Identical findings remained after *also* controlling for youth's social anxiety (see Table 3). Thus, both bootstrap and Sobel tests revealed that after controlling for age and social anxiety (composite) there was a significant indirect effect of mothers' reports of youth academic competence on youth depression through youth perceived academic competence.

Regarding youth social anxiety, as seen in Table 3, after controlling for youth age, both before and after also controlling for youth depression, neither the total or direct effects of mothers' report of youth academic competence on youth social anxiety were significant. The indirect effect of mothers' report of youth academic competence on youth social anxiety through youth perceived academic competence did not contain zero, before, but not after, controlling for youth depression indicating youth self-perception of academic competence mediated the relation between mothers' reports of youth academic competence and youth social anxiety.

Age as Moderator

Given the age range of the sample, moderated mediation analyses using 5,000 bootstrapped samples via PROCESS macro for SPSS [75, 80] were conducted to examine whether the mediating effects of youth's self-perceptions were similar across younger, middle, and older aged youth.

Social Acceptance

Regarding youth depression, conditional indirect effects of mothers' report of youth social acceptance on youth depression through youth perceived social acceptance at

Table 3 Effects of mothers' reports of youth academic competence on youth depression and social anxiety through youth self-perceptions of academic competence (N = 110)

	Total effect	Direct effect	Indirect effect through youth self-perception of academic competence		
	c (*SE*)	c′ (*SE*)	ab (SE)	z	CI_{95}
Youth depression (composite) as dependent variable					
M-report youth academic competence[a]	−.24 (.06)***	−.11 (.06)*	−.13 (.04)	−3.56***	[−.222, −.073]
M-report youth academic competence[c]	−19 (.05)***	−.12 (.05)**	−.07 (.02)	−2.80**	[−.128, −.034]
Youth social anxiety (composite) as dependent variable					
M-report youth academic competence[a]	−.09 (.06)	.02 (.06)	−.11 (.04)	−3.09**	[−.192, −.051]
M-report youth academic competence[b]	.07 (.05)	.09 (.06)	−.02 (.02)	−1.14	[−.067, .004]

c, c′, and ab = unstandardized regression coefficients as denoted.; z = Sobel test statistic; CI_{95} = 95 % bias-corrected bootstrap confidence intervals; CI's not containing zero are significant at $p < .05$

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

[a] Controlling for youth age

[b] Controlling for youth age and depression composite

[c] Controlling for youth age and social anxiety composite

different levels of age were not significantly different [−.032, .007]. The lack of difference between conditional indirect effects indicates no moderated mediation [80], therefore the mediating role of youth self-perceptions was similar for younger, middle, and older aged youth. Findings remained after controlling for youth's social anxiety [−.019, .006]. Regarding youth social anxiety, the conditional indirect effects of mothers' report of youth social acceptance on youth social anxiety through youth perceived social acceptance at different levels of age were not significantly different, suggesting no moderated mediation [−.025, .006]. Findings remained after controlling for youth's depression [−.017, .003]. Thus, the mediation effects for youth self-perceptions were similar across age groups, before and after controlling for comorbid symptoms.

Academic Competence

Regarding youth depression, the conditional indirect effects of mothers' report of youth academic competence on youth depression through youth perceived academic competence at different levels of age were significantly different, indicating moderated mediation [−.048, −.008]. Conditional indirect effects showed that youth-reported academic competence mediates the effect of mother-reported academic competence on youth depression, for older and middle aged youth, but not for younger aged youth. These findings all remained after controlling for youth's social anxiety [−.028, −.004]. Regarding youth social anxiety, the conditional indirect effects of mothers' report of youth academic competence on youth social anxiety through youth perceived academic competence at different levels of age were significantly different, suggesting moderated mediation [−.039, −.007]. Conditional indirect effects showed that youth-reported academic competence mediates the effect of mother-reported academic competence on youth social anxiety, for older and middle aged youth, but not for younger aged youth. However, after controlling for youth's depression, no mediation or conditional indirect effects were present for any age level [−.018, .001].

Discussion

Four main findings emerged in this study of clinic-referred youth, when youth self-perceptions and mothers' perceptions of children's social and academic competence were considered simultaneously. First, *both* youth self-perceptions of social acceptance and mother-reported youth social acceptance had independent and unique relations to each of children's depression and social anxiety, before and after controlling for comorbid symptoms. Second, *both* youth self-perceptions of academic competence and mother-reported youth academic competence had independent and unique relations to children's depression, before and after controlling for social anxiety. Third, *only* youth self-perceptions of academic competence were related to youth social anxiety, before, but not after controlling for depression. Fourth, with regards to depression, larger effect sizes were observed for children's perceived, versus mother-reported, social acceptance; and for children's perceived, versus mother-rated, children's academic competence.

Our supplementary analyses regarding mediation also revealed four main findings: (1) youth self-perceptions of

social acceptance mediated the relation between mothers' reports of youth social acceptance and youth depression; (2) youth self-perceptions of social acceptance mediated the relation between mothers' reports of youth social acceptance and youth social anxiety; (3) youth perceived academic competence mediated the relation between mothers' reports of youth academic competence and youth depression, both before and after controlling for social anxiety; and (4) youth self-perceptions of academic competence mediated the relation between mothers' reports of youth academic competence and youth social anxiety, before but not after controlling for youth depression.

Taken together, our findings are consistent with theories of depression, including the dual failure model [11], and other theories of depression [12, 13] and social anxiety [35–37] that highlight the role of negative or deficient self-perceptions in the etiology and maintenance of depression and social anxiety. Our findings are also consistent with Cole's [14] competency-based model of depression, and to our knowledge our findings are the first to examine this model in a clinic-referred sample of youth, as well as consider symptom specificity and extend this model to youth social anxiety. Although cross-sectional, our mediation findings are consistent with a competency-based model of youth social anxiety, yet further studies with different samples and different informants' appraisals of youth competence are needed. Given the overlap in theoretical and empirical foundations regarding depression and social anxiety described earlier, competency-based model of depression tenants can apply equally well to social anxiety. For example, negative feedback children receive from others regarding their social competence (and competence in other areas) could lead to fear of negative evaluation by others as well as negative self-perceptions of competence placing children at subsequent risk for social anxiety, as well as depression. Although some work has demonstrated low perceived social acceptance is a prospective predictor of later fear of negative evaluation and social anxiety in adolescence, even after accounting for earlier preexisting social withdrawal symptoms [81], the antecedents of low perceived social acceptance may well be competency-related feedback from significant others.

Our findings revealed some similarities, and some differences, between depression and social anxiety. In the social acceptance domain, findings for depression and social anxiety were similar. For example, when considered together in regression analyses, *both* youth self-perceptions and mother-reported perceptions of youth had significant independent and unique relations to each of children's depression and social anxiety, before and after controlling for comorbid symptoms. Moreover, via bootstrapping we found youth self-perceptions mediated the relation between mothers' perceptions and each of children's depression and social anxiety. After controlling for comorbid symptoms, both the total effect and direct effect remained significant yet the indirect effect or mediation via self-perceptions became nonsignificant. Moreover, age did not moderate the mediation results, before or after controlling for comorbid symptoms. These findings collectively indicate that both mother-reported and children's perceived social acceptance are robustly related to each of social anxiety and depression.

In the academic competence domain, a different pattern emerged for depression and social anxiety. Here, when considered simultaneously in regression *both* youth self-perceptions of academic competence and mother-reported youth academic competence had independent and unique relations to depression, before and after controlling for social anxiety; yet *only* youth self-perceptions of academic competence were related to youth social anxiety, before, but not after controlling for depression Moreover, our bootstrapping analyses revealed youth-reported academic competence mediated the effect of mother-reported academic competence on youth depression, both before and after controlling for social anxiety, with significant total and direct effects. Yet for social anxiety, self-perceptions mediated before, but not after controlling for depression, and no total or direct effects were significant. These findings echo those of past studies when comorbid symptoms are controlled for, in that perceived academic competence or academic self-efficacy is related to depression and not to social anxiety [55–57], and youth with comorbid depression and social anxiety have lower self-perceptions of academic competence than socially anxious youth without depression [44].

In the area of academic competence we found some differences with respect to youth age, in that for younger youth, unlike middle aged or older youth, self-perceptions of academic competence did not mediate the relation between mother-reported academic competence and children's depression or social anxiety. Although we did not assess the stability of self-perceptions, this finding could reflect children's self-perceptions becoming more stable and well-developed as a function of age [59, 60]. In addition, for early elementary school children the academic domain may be less salient and perhaps teachers' or peers', rather than mothers' appraisals, are more critical to young children's self-perceptions of academic competence. Nevertheless, low academic competence and young children's negative self-perceptions of academic competence have been found to predict later social competence and internalizing symptoms [82]. Thus, continued work regarding the potential linkages between young children's academic competence and their self-perceptions of their academic competence in regards to depression and social anxiety remains an important area of inquiry.

Our findings may have implications for assessment, prevention or treatment of social anxiety and depression. First, given that mother-reported and children's perceived social acceptance and children's perceived academic competence were related to children's depression and social anxiety in this clinic-referred sample presenting with a wide array of problems, assessing children's peer acceptance and academic functioning (via interviews or other assessment measures) from parent, child, and other informants (e.g., teachers) may be important in tailoring interventions, regardless of the presenting concerns. Second, as mothers' perceptions of social acceptance were uniquely and significantly related to children's symptoms (on composite scores), and correlations indicated that mother-reported youth academic competence was significantly related to youth *self-reported* depression and social anxiety, it may be important for interventions to focus on the potential role of mothers' perceptions. For example, examining, and modifying as needed, parent's direct or indirect negative competency-related feedback or communication of their perceptions to the child, which the child may subsequently internalize, may be important.

Our findings also, in conjunction with the theoretical literature, suggest that children's negative self-perceptions or view of self may be a potential treatment target or a mediator and/or moderator of treatment outcome for children's social anxiety and/or depression. Cognitive-behavioral treatments (CBT) are empirically supported for youth depression and social anxiety [83], and they tend to focus on skill building and cognitive restructuring. Although a few studies have examined cognitive mediators (e.g., dysfunctional attitudes, automatic thoughts, cognitive distortions) of CBT for youth depression [84], no studies have examined youth self-perceptions of social acceptance or academic competence per se as a cognitive mediator or moderator of CBT treatment outcome for either depression or social anxiety.

Interpersonal psychotherapy for depressed adolescents (IPT-A) is an empirically supported treatment [8, 9] that focuses on interpersonal interactions related to depression, such as conflict with parents and social problems with peers. An IPT-A skills training prevention program was found to reduce both depression and anxiety symptoms [85]. IPT-A focuses on changing child-parent and child-peer relations and as such may impact feedback from parents and peers regarding the adolescent's competence, and subsequently improve their self-perceptions and depressive and/or anxiety symptoms. However, as Mufson [8] notes, "there are no identified mediators of IPT-A outcome" (p. 68). Indeed, the mechanism of change *may be* increased perceived competence via feedback through significant others regarding youth competence.

Social effectiveness therapy for children (SET-C) is an empirically supported treatment for social anxiety that includes social skills training, peer generalization, and exposure [10]. Although cognitive components are not directly targeted in SET-C, changes in social anxiety outcomes have been found to be mediated by youth perceived loneliness [86]. Given that negative self-perceptions are at the core of cognitive and interpersonal theories of social anxiety, a putative mediator and/or moderator of SET-C treatment outcome may be youth perceived social acceptance and/or perceptions of other areas of their competence. These notions may be worthy of investigating, as studies of adults with social anxiety have found that reductions in maladaptive beliefs related to evaluation (e.g., items, some reverse scored, "I don't fit in", "I am worthwhile", "People like me", "I am loveable", "If people could see who I really am, they would reject me", etc.) mediated the effect of CBT treatment outcome on severity of social anxiety symptoms [87]. Moreover, adults' negative perceptions of their personal abilities/skills and appearance partially mediated the relation between various treatment conditions and clinician's ratings of changes in diagnostic severity of social anxiety from pre- to post-treatment [88]. Whether similar findings would emerge in youth samples examining treatments for social anxiety and/or depression remains an important area for future research.

At present, no evidence-based treatments exist for youth with comorbid depression and social anxiety. This is unfortunate as research on CBT of anxiety disorders in youth finds those with social phobia have the poorest treatment responses and outcomes compared to other anxiety disorders, and comorbid depression negatively influences treatment outcome [5]. Likewise, IPT-A for depression has been found to be associated with poorer outcomes for youth with comorbid anxiety, particularly social anxiety [89]. Given the high comorbidity of depression and social anxiety, in developing some "core" treatment components our results, in conjunction with the theoretical literature, suggest targeting children's self-perceptions of social acceptance and academic competence, and their parents' perceptions (and how they may be communicated), will likely be important.

Some caveats to the findings of this study need to be considered. It is important to note that mediation it best assessed via longitudinal designs whereby the causal ordering and temporal sequencing can be determined. Whether our cross-sectional findings of mediation and indirect effects would emerge in a longitudinal analysis is unknown [90]. Moreover, our correlational and cross sectional study was not able to assess if bidirectional or reciprocal relations exist between social acceptance and academic competence and children's depression and social anxiety. Indeed, some studies find that longitudinal relations between depression and social problems, and

depression and academic performance problems, are bidirectional [24].

Other limitations of the current study suggest important avenues for future research. We relied on all self-report and questionnaire measures. Also, although only one-third of our sample exceeded the clinical cutoffs on youth self-reported depression (34 %) and social anxiety (32 %) measures, roughly one-third of inpatient and outpatient samples of youth have depressive disorders and lifetime prevalence of diagnosable depressive disorders in the general population of youth ranges from 20 to 30 % [91]. Our sample was clinic-referred and not a sample of youth with depressive disorders, where findings may be different and perhaps more robust. Future work is needed to examine similar questions in youth using structured diagnostic clinical interviews.

We also relied only on mothers' reports of youth social acceptance and academic competence, and did not use more objective measures of social acceptance or academic competence or include other-informants' reports of youth social acceptance or academic competence. Fathers' appraisals of youth may be particularly important with respect to youth social anxiety [92], and the competency-based model of depression contends that the appraisals of multiple significant others (parents, teachers, peers) impact youth self-perceptions [62]. Finally, although Caucasian and non-Caucasian youth did not differ on any of the measures, we did not examine ethnic differences which may also be important for future research, as internalizing symptoms and disorders, and their correlates, often vary by ethnic group [93].

Summary

Depression and social anxiety are highly comorbid, and both are theoretically and empirically associated with low social acceptance and academic competence as well as negative self-perceptions in these areas. Our study has highlighted the independent relations that youth- and mother-reported social acceptance and academic competence have to depression and social anxiety, and the salience of youth self-perceptions. Some differences for depression and social anxiety were also found. For example, *only* youth self-perceptions of academic competence were related to social anxiety, before, but not after controlling for depression. For depression, larger effect sizes were observed for children's perceived, versus mother-reported, social acceptance and academic competence. Bootstrapping and Sobel tests found youth self-perceptions of social acceptance mediated the relation between mothers' perceptions and each of youth depression and social anxiety; and perceived academic competence mediated the relation between mothers' perceptions and youth depression, both before and after controlling for social anxiety. Our findings are also the first to report on Cole's [14] competency-based model of depression in a clinic-referred sample of youth, as well as consider symptom specificity and extend this model to youth social anxiety. Implications for assessment and treatment and future research directions were discussed.

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