RESEARCH ARTICLE

Symptomatology and Family Functioning in Children and Adolescents with Comorbid Anxiety and Depression

Carly Guberman MA[1]; Katharina Manassis MD[2, 3]

Abstract

Objective: Previous studies suggest that comorbid anxiety and depressive disorders in youth are associated with more severe symptomatology and family dysfunction than either disorder alone. Our aim was to replicate and extend past findings by expanding the definition of comorbidity to include comorbid subthreshold symptoms (i.e., symptoms fall below the diagnostic criteria cut-off of a disorder). **Method:** A clinic-based sample of 193 youth (aged 4-18) and maternal caregivers completed measures assessing the youth's internalizing symptoms and family functioning. **Results:** Comorbid youth endorsed more severe anxiety symptoms and family dysfunction than anxiety-only youth. By contrast, comorbid youth did not endorse more severe depression symptoms or family dysfunction compared to youth with depression only. Similar results were found for maternal reports of internalizing symptoms, but maternal reports of family functioning yielded no group differences. **Conclusions:** This study replicates past findings that the presence of comorbid depression in anxious youth is associated with severe anxiety and family dysfunction. Our findings also suggest that subthreshold depressive symptoms in anxious youth relate to the severity of symptomatology and family dysfunction reported, but subthreshold anxiety symptoms in depressed youth do not. Longitudinal studies are needed to further clarify the etiology and developmental course of this comorbidity.

Key words: *anxiety, depression, comorbidity, subthreshold symptoms, youth, family functioning*

Résumé

Objectif: Des études précédentes indiquent que la dépression anxieuse comorbide des enfants et des adolescents s'accompagne de symptômes plus sévères et d'un dysfonctionnement familial plus grand que lorsque l'anxiété ou la dépression se présente seule. Reproduire et extrapoler les résultats d'études préalables; élargir la définition de comorbidité en incluant des valeurs sous-seuil pour les symptômes (c'est-à-dire que les symptômes se trouvent en dessous de la valeur seuil choisie pour diagnostiquer le trouble). **Méthodologie:** Un échantillon clinique de 193 enfants et adolescents (âgés de 4 à 18 ans) et leur mère ont rempli un questionnaire sur les symptômes d'intériorisation et sur le fonctionnement familial. **Résultats:** Chez les enfants anxieux et déprimés, l'anxiété était plus grave et le dysfonctionnement familial plus marqué que chez les enfants qui souffraient d'anxiété seule. En revanche, chez ces mêmes enfants, la dépression n'était pas plus grave et le dysfonctionnement familial pas plus marqué que chez les enfants qui souffraient de dépression seule. Le rapport de la mère sur les symptômes d'intériorisation donnait les mêmes résultats, contrairement au rapport sur le dysfonctionnement familial qui n'indiquait aucune différence entre les deux groupes. **Conclusions:** Cette étude confirme les études préalables qui ont conclu que, chez les enfants anxieux, la dépression est grave et le dysfonctionnement très marqué. Elle constate également que les valeurs sous-seuil choisies pour les symptômes dépressifs chez les enfants anxieux sont en corrélation avec la gravité des symptômes et le niveau de dysfonctionnement familial, ce qui n'est pas le cas pour les valeurs sous-seuil choisies pour les symptômes d'anxiété chez les enfants déprimés. Des études longitudinales devront clarifier l'étiologie et le développement de cette comorbidité.

Mots clés: *anxiété, dépression, comorbidité, valeurs sous-seuil, enfants, adolescents, fonctionnement familial*

[1]Department of Human Development and Applied Psychology, Ontario Institute for Studies in Education of the University of Toronto, Ontario
[2]Department of Psychiatry, University of Toronto, Ontario
[3]Department of Psychiatry, The Hospital for Sick Children, Toronto, Ontario

Corresponding email: carly.guberman@utoronto.ca

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Introduction

The co-occurrence of anxiety and depression in youth is frequent (Brady & Kendall, 1992; Compas & Oppedisano, 2000; Masi et al., 2004) and has been associated with worse impairment and increased suicidality than either symptom cluster in isolation (Foley, Goldston, Costello, & Angold, 2006; Franco, Saavedra, & Silverman, 2007; Last, Hansen, & Franco, 1997; Manassis, & Hood, 1998; Manassis & Menna, 1999; Masi, Favilla, Mucci, & Millepiedi, 2000; Masi, Mucci, Favilla, & Millepiedi, 2001; Nottelmann & Jensen, 1995; O'Neil, Podell, Benjamin, & Kendall, 2010). Compared to either diagnosis alone, comorbid diagnoses in youth are associated with more severe internalizing symptoms (Bernstein, 1991; Bernstein & Garfinkel, 1986; Franco et al., 2007; Masi et al., 2000; Mitchell, McCauley, Burke, & Moss, 1988; O'Neil et al., 2010; Strauss, Last, Hersen, & Kazdin, 1988) and impaired family functioning (O'Neil et al., 2010; Stark, Humphrey, Crook, & Lewis, 1990). Such findings suggest that comorbid disorders may require more intense treatment and prevention approaches targeting family interactions. While comorbid anxious and depressive states involving subthreshold syndromes (i.e., below the cut-off for meeting full diagnostic criteria of a disorder) are associated with more impairment than either state occurring alone (reviewed in Rivas-Vazquez, Saffa-Biller, Ruiz, Blais, & Rivas-Vazquez, 2004), it remains unclear whether comorbid subthreshold symptoms are related to worse symptom severity and family functioning. While it is common in youth for subthreshold syndromes to occur alongside disorders meeting full diagnostic criteria (Lewinsohn, Shankman, Gau, & Klein, 2004), clinicians may sometimes focus on a patient's primary diagnosis and overlook comorbid subthreshold symptoms (reviewed in Rivas-Vazquez et al., 2004). Discovering the clinical implications of comorbid subthreshold symptoms is therefore crucial to the conceptualization, treatment, and prevention of this clinical profile. The current study aimed to replicate and extend past findings regarding the relationship between comorbidity, internalizing symptomology, and family dysfunction by expanding the definition of comorbidity to include youth with subthreshold symptoms. Given the poor agreement between child and parent reports in clinical samples (reviewed in Barbosa, Tannock, & Manassis, 2002), multiple informants were used.

Characteristics of Comorbidity: Defined by Full Diagnostic Criteria

Symptom Ratings

Previous studies have examined self-reported internalizing symptoms of youth assigned to comorbid, anxious-only, or depressed-only groups according to whether they meet diagnostic criteria for one or both disorders. As expected, comorbid youth report greater depressive symptoms compared to youth with anxiety diagnoses only (Bernstein, 1991; Bernstein & Garfinkel, 1986; Franco et al., 2007; O'Neil et al., 2010), and greater anxiety symptoms compared to youth with depression diagnoses only (Bernstein, 1991). An intriguing finding is that, in most studies, comorbid youth report more severe anxiety symptoms than youth with anxiety diagnoses only (Bernstein, 1991; Bernstein & Garfinkel, 1986; Franco et al., 2007; Masi et al., 2000; O'Neil et al., 2010; Strauss et al., 1988), as well as more severe depressive symptoms than youth with depression diagnoses only (Bernstein, 1991; Mitchell et al., 1988), suggesting that comorbidity is related to an exacerbation in reported severity of depression or anxiety symptoms. Bernstein and Garfinkel (1986), however, found no significant differences between comorbid and depression-only groups on self-reports of anxiety or depression symptoms, suggesting that comorbid anxiety in depressed youth may not be associated with increased depressive symptoms. However, this study was limited by small sample size. Masi et al. (2001) compared youth with comorbid dysthymic disorder and generalized anxiety disorder to youth with dysthymic disorder alone. While the comorbid group endorsed more depressive symptomatology than the pure dysthymic group, this finding approached, but did not reach, statistical significance. They suggested that their measure of depressive symptoms, which assessed only the presence or absence of symptoms rather than severity ratings, was perhaps not sensitive enough to completely capture the seriousness of depressive symptoms associated with comorbidity.

Family Functioning

Stark et al. (1990) examined youth and maternal reports of family dysfunction when youth were diagnosed with comorbid anxiety and depressive disorders, anxiety-only, or depression-only. Although increased family dysfunction was associated with comorbidity, compared to either disorder alone, more differences were found between the comorbid and anxiety-only groups than between the comorbid and depression-only groups. Compared to the anxiety-only group, comorbid youth reported greater conflict and lower democratic family style, active/recreational orientation, moral/religious emphasis, and family sociability. Higher family enmeshment was reported by comorbid and depression-only youth, than by anxiety-only youth. Mothers of comorbid children, compared to mothers with anxious-only children, rated their families higher in enmeshment and lower in active/recreational orientation, moral/religious emphasis, democratic family style, and family idealization. Compared to mothers of depressed-only children, mothers of comorbid children rated their families higher on enmeshment and lower on family idealization. O'Neil et al. (2010) also compared

youth and maternal reports of family dysfunction between youth with anxiety diagnoses only and those with comorbid anxiety and depressive disorders. Comorbid youth endorsed significantly more overall family dysfunction than pure anxious youth. When examining specific constructs of family functioning, they found a non-significant trend for comorbid youth to report more problematic functioning in affective responsiveness. Mothers of comorbid children reported more overall dysfunction than mothers of anxiety-only youth. However, this result was not statistically significant.

Rapee (1997) concludes that studies examining family characteristics suggest a positive relationship between perceived (and perhaps actual) parental control and rejection and anxiety and/or depression. He posits that parental rejection is more specifically related to depression, suggesting that repeated parental rejection and hostility may lead a child to doubt that positive experiences are attainable and induce a sense of learned helplessness. He links excessive parental control to anxiety since excessive control and protection may cause the child to see the world as a threatening place.

Although findings point to greater family dysfunction in youth with comorbid disorders, the directional quality of this relationship remains inconclusive. Family dysfunction may represent a risk factor for comorbidity, but it is also possible that family members' responses to youth with co-occurring anxiety and depression contribute to family dysfunction.

Characteristics of Comorbidity: Subthreshold Perspective

There is a lack of research deliberately examining the impact of comorbid subthreshold syndromes of anxiety and depression in youth, but researchers may have already inadvertently explored their significance with respect to symptom severity and family functioning (Johnson, Inderbitzen-Nolan, & Schapman, 2005; Manassis & Menna, 1999; Starr & Davila, 2008). For example, Manassis and Menna (1999) examined children who met criteria for DSM-IV diagnoses of anxiety disorders, based on clinician interviews of parents. Only a small percentage of the sample met criteria for a comorbid depressive disorder. Subjects were then divided into an anxiety-only, depression-only, and comorbid group based on children's self-reports of symptom ratings on anxiety and depression questionnaires. Children classified as having depression could, therefore, be considered to have anxiety disorders, according to DSM criteria, with comorbid subthreshold depressive symptoms, according to their questionnaire ratings. These children reported higher social anxiety than the anxiety-only group. Johnson et al.'s (2005) study of family environment divided non-clinical youth into control, socially anxious, depressed, and mixed socially anxious and depressed groups based on self reports of anxiety and depression. Given that subjects were non-clinical and no formal diagnoses were indicated, the latter two groups had subthreshold depressive symptoms. Both the comorbid and depressed groups described their parents as more concerned with others' opinions, ashamed of their performance, and restrictive in family sociability, than the socially anxious and control groups. Interestingly, such characteristics fit with Rapee's (1997) excessive parental control and rejection model. Similarly, Starr and Davila (2008) examined the relationship between comorbidity and family variables. They categorized young adolescent girls into four groups according to whether they endorsed a lifetime history of depression or social anxiety symptoms, rather than full diagnostic criteria for either disorder. Groups consisted of depressive symptoms only, social anxiety symptoms only, both depressive and social anxiety symptoms (i.e., comorbid group), or no symptoms of depression or social anxiety. The comorbid group endorsed more alienation from parents than the pure depression and pure anxiety group. These studies lend preliminary support to the idea that comorbid subthreshold depressive symptoms in anxious youth are associated with more severe reports of anxiety symptoms and family dysfunction than their absence. They also suggest an association between increased family dysfunction and comorbid subthreshold anxiety symptoms in depressed youth.

Hypotheses

We hypothesized that comorbid youth (i.e., youth experiencing either anxiety disorder(s) with depressive symptoms or depressive disorder(s) with anxious symptoms) would endorse more severe anxious symptoms on self-report and maternal-report measures of anxiety than youth with anxiety disorders only. Secondly, we hypothesized that comorbid youth would endorse more severe depressive symptoms on self-report and maternal-report measures of depression than youth with depression disorders only. Thirdly, we hypothesized that family dysfunction (by child and parent report), in the presence of comorbidity, would be more severe than family dysfunction in the presence of either anxiety disorder or depression without comorbidity. However, as previously found (Johnson et al., 2005; Stark et al., 1990), we hypothesized that the depression-only group would be more similar to the comorbid group than the anxiety-only group on reports of family functioning.

Secondary predictions: Given that epidemiological studies have shown increases in rates of depression from childhood to adolescence (Birmaher et al., 1996), we predicted age differences between our diagnostic groups, such that participants in the depression-only and comorbid groups would be older than participants in the anxiety-only groups. Furthermore, we predicted that participants in the comorbid group would report higher levels of previous psychotropic medication use or psychotherapy involvement than our anxiety or

depression groups without comorbidity, given their more severe symptomatology.

Method

Participants

Participants were 193 youth (88 males), aged 4 to 18 years (M = 12.44, SD = 3.07), and maternal caregivers referred for assessment to the mood and anxiety outpatient clinic of a large mental health centre in Toronto. According to the Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV; Silverman & Albano, 1996), which was administered at the time of assessment, youth participants met the DSM-IV (American Psychiatric Association, 1994) criteria for at least one primary diagnosis of an anxiety disorder (i.e., Generalized Anxiety, Separation Anxiety, Social Phobia, Specific Phobia, Panic, Anxiety Not Otherwise Specified), depressive disorder (i.e., Major Depression, Dysthymia), or both. A confirmed or provisional diagnosis of Oppositional Defiant Disorder (ODD) or Conduct Disorder (CD) was present for 8.8% of participants, and 19.7% had a confirmed or provisional diagnosis of Attention-Deficit/Hyperactivity Disorder (ADHD). Of 124 participants who provided ethnicity information, 73.4% were Caucasian, and 26.6% were of Asian, African, Latin American, or mixed descent. For participants who reported parental occupation and education (n = 115), a mean family socioeconomic status (SES) score of 48.89 (SD = 11.03) was determined, corresponding to class IV – medium business, minor professional and technical workers (Hollingshead, 1975).

Procedure

The study was approved by the Research Ethics Board of the centre. Informed consent was obtained after study procedures were explained. Families were seen by one of 10 psychologists and psychiatrists with extensive training in assessing internalizing disorders and administering the ADIS-IV. Clinicians established diagnoses based on a semi-structured interview with parents and child, the ADIS-IV (Silverman & Albano, 1996). The ADIS-IV emphasizes assessment of anxiety disorders, but covers all major DSM diagnoses, including depression. Demographic information was obtained by parent questionnaire: the Ontario Child Health Study Family and Household Form (Boyle et al., 1987). Questionnaires were completed at the clinic or were mailed out and completed within three months of the assessment.

Diagnostic Groups

Youth were classified into three groups: (a) pure anxiety (PUR-ANX; n = 86) meeting DSM-IV criteria for at least one anxiety disorder, with no co-occurring depressive disorder or subthreshold symptoms; (b) pure depression (PUR-DEP; n = 40) meeting DSM-IV criteria for at least one depressive disorder, with no co-occurring anxiety disorder or subthreshold symptoms; and (c) comorbid anxiety and depression (ANX+DEP; n = 67) meeting DSM-IV criteria for either co-occurring anxiety and depressive disorders (n = 32), at least one anxiety disorder and co-occurring depressive subthreshold symptoms (n = 23), or at least one depressive disorder and co-occurring anxiety subthreshold symptoms (n = 12). The presence of subthreshold symptoms was established if clinicians noted significant symptoms of anxiety or depression failing to meet diagnostic criteria, or that an anxiety or depressive disorder was not conclusively established but should not be ruled out.

Youth and Caregiver Measures

Child Behavior Checklist (CBCL; Achenbach, 1991a; Achenbach & Rescorla, 2001) and the Youth Self-Report (YSR; Achenbach, 1991b; Achenbach & Rescorla, 2001). The CBCL is a parent questionnaire assessing emotional and behavioral problems in children ages 4 to 18 (1991 version) and 6 to 18 (2001 version). The YSR is a matching self-report questionnaire completed by children ages 11 to 18 years. Study participants completed assessments between the years 2001 and 2005. Given that the most recent versions of the YSR and CBCL were released in 2001, the timeframe of the study coincides with their release. Consequently, at the time of the study, both versions were circulating in the clinic. Participants, therefore, completed either the 1991 or 2001 version of the YSR and CBCL. Items are endorsed using a 3-point scale ranging from "not true" to "very true or often true." We examined the standardized T scores for the anxious/depressed and the withdrawn/depressed scales. The anxious/depressed scale includes items pertaining to depressive symptoms related to self-devaluation and anxiety symptoms, and the withdrawn/depressed scale includes items pertaining to withdrawn and anhedonic aspects of depression. As the PUR-ANX, PUR-DEP and ANX+DEP did not differ significantly in proportions of participants completing 1991 or 2001 versions, results from both versions were collapsed together for analyses. CBCL and YSR anxious/depressed syndrome scales have internal consistencies in the mid .80s to low .90s and withdrawn/depressed syndrome scales have internal consistencies in the high .50s to low .80s (Achenbach, 1991a; Achenbach, 1991b; Achenbach & Rescorla, 2001).

Screen for Child Anxiety Related Emotional Disorders (SCARED; Birmaher et al., 1999). The SCARED is a 41-item screen for childhood anxiety disorders. Items include a 3-point scale ranging from "not true or hardly ever true" to "very true or often true." We examined the total raw score reported by mothers and youth ages 7 to 18 years. Internal consistencies for both groups were .92.

Brief Family Assessment Measure – III: General Scale (FAM; Skinner, Steinhauer, & Santa-Barbara, 1995). The FAM is a 14-item measure of perceived strengths and weaknesses of family functioning. The 14 items are derived from a longer version containing seven subscales. The brief version was chosen due to its rapid administration time but does not permit the calculation of subscale scores. Each item uses a 4-point scale ranging from "strongly disagree" to "strongly agree". The total raw score was examined. For the current sample, internal consistencies were .87 and .81 for child (ages 7 to 18) and parent reports, respectively.

Measures Completed by Youth Only

Children's Depression Inventory (CDI; Kovacs, 1992). The CDI is a 27-item self-report inventory for depressive symptoms in children ages 7 to 17. Items are rated on a 3-point scale. The present study examined the standardized T scores for the total score. In the current sample, an internal consistency of .92 was found.

Missing Data

Subsets of the total sample with complete data for a particular questionnaire were included in analyses for that measure (minimum sample size = 57, maximum sample size = 146). Except for the CBCL and YSR, if participants omitted more than 20% of items on a measure's subscale, their data for that subscale and total measure were excluded. If participants omitted less than 20% of subscale items, their mean score from completed subscale items was substituted for the missing item(s) (Downey & King, 1998; Hawthorne & Elliott, 2005). CBCLs and YSRs with more than 8 items omitted were excluded (Achenbach & Rescorla, 2001). Those with 8 or less missing items were scored without substitution.

Data Analysis

Group data were inspected for univariate (i.e., scores exceeding the 1.5 interquartile range) and multivariate (i.e., using the Mahalanobis distance statistic; Tabachnick & Fidell, 2001) outliers. Analyses excluding outliers are reported. To examine group differences in demographic, externalizing disorder, and treatment variables, we ran analyses of variance (ANOVAs) and χ^2 tests. Since we found significant group differences for age, we conducted analyses of covariance (ANCOVAs) with age as a covariate to test for group differences on outcome measures. Before conducting ANCOVAs, we evaluated the homogeneity-of-slopes assumption (Green & Salkind, 2005). When a significant ($p < .05$) interaction between the covariate and diagnostic group was found, the ANCOVA was abandoned since violation of this assumption would yield non-meaningful results (Green & Salkind, 2005). Instead, we converted our covariate (age) into a categorical variable including children (below age 13) and adolescents (age 13 and above) and conducted a two-way ANOVA comparing the dependent variable between age and diagnostic groups (Tabachnick & Fidell, 2001). We used the Holm's sequential Bonferonni method (Holm, 1978) to control for Type I error at the .05 level across significance tests of internalizing symptom measures and across significance tests of family functioning measures. In analyses yielding group differences, follow-up pairwise comparisons were conducted using the Holm's sequential Bonferroni method to control for Type I error at the .05 level across all comparisons.

Results

Demographics, Externalizing Comorbidity, and Treatment

Results are displayed in Table 1. Significant group differences were found for age [F (2, 190) = 25.15, $p \leq .001$]. The mean ages of PUR-DEP and ANX+DEP were significantly greater than PUR-ANX. Therefore, we decided to control for age when assessing for group differences in our outcome measures.

Groups did not differ on SES, sex, race, parental composition at home (i.e., presence of both biological parents), or ODD/CD or ADHD diagnoses. Significant group differences were found for prior treatment ($\chi^2 = 10.04$, $df = 2$, $p \leq .05$), but we did not have specific descriptions of this treatment so did not include it in further analyses. PUR-DEP and ANX+DEP received more previous therapy or medication than PUR-ANX. Diagnostic groups also differed in their reporting of medication use at the time of study participation ($\chi^2 = 9.96$, $df = 2$, $p \leq .05$), with ANX+DEP being more likely than the PUR-ANX to report taking psychotropic medication.

Internalizing Symptom Outcome Measures

Youth Reports

An ANCOVA yielded significant group differences on the YSR anxious/depressed scale [F (2, 53) = 10.15, $p \leq .0038$] (Table 2). ANX+DEP reported significantly higher scores than PUR-ANX and PUR-DEP, with no differences between the latter two groups. Although a two-way ANOVA for the YSR withdrawn/depressed scale yielded no significant results, a two-way ANOVA for the CDI indicated a significant main effect for diagnostic group [F (2, 131) = 12.39, $p \leq .0038$] and a significant interaction between diagnostic and age groups [F (2, 131) = 5.91, $p \leq .0063$] (Table 3). Given the significant interaction, we ignored the diagnostic group main effect and examined the simple main effects of diagnostic group within each age group and the simple main effects of age group within each diagnostic group. Significant differences were found between child diagnostic groups [F (2, 131)

Table 1. Demographic characteristics of diagnostic groups

	PUR-ANX			PUR-DEP			ANX+DEP					
Continuous variable	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*		*p*	
Age (total sample)	86	10.88_a	2.82	40	13.77_b	2.57	67	13.66_b	2.75		.000	
Under age 13	66	9.68	1.90	16	11.18	1.55	27	10.73	1.33		—	
Age 13 and over	20	14.83	1.34	24	15.49	1.36	40	15.63	1.30		—	
Family SES*	53	48.70	10.13	23	48.41	9.29	38	50.38	11.93		.70	
Categorical variable	*n*	%		*n*	%		*n*	%		χ^2	*df*	*p*
Male	40	46.5		17	42.5		31	46.3		.20	2	.91
Caucasian*	48	80.0		16	69.6		27	65.9		2.71	2	.26
Both biological parents at home	56	65.1		20	50.0		43	64.2		2.92	2	.23
Prior mental health treatment	35	40.7_a		25	62.5_b		43	64.2_b		10.04	2	.007
Taking psychotropic medication at assessment	16	18.6_a		11	$27.5_{a,b}$		28	41.8_b		9.96	2	.007
Diagnosis of ODD or CD	7	8.1		6	15.0		4	6.0		2.63	2	.27
Diagnosis of ADHD	15	17.4		8	20.0		15	22.4		.59	2	.75

Note. Groups in the same row with different subscripts are significantly different as determined by post hoc pairwise comparisons with Holm's sequential Bonferroni correction method to control for Type I error at the .05 level.

*Information for this variable was not provided by all participants

= 5.45, $p \leq .025$]. PUR-DEP reported significantly higher scores than PUR-ANX and ANX+DEP. There were no differences between PUR-ANX and ANX+DEP. Significant differences were found between adolescent groups [$F(2, 131) = 10.45, p \leq .025$]. PUR-DEP and ANX+DEP reported significantly higher scores than PUR-ANX. There were no differences between PUR-DEP and ANX+DEP. Although no differences were found between children and adolescents in PUR-ANX or PUR-DEP, ANX+DEP adolescents reported significantly higher scores than ANX+DEP children [F (1, 131) = 22.09, $p \leq .017$]. An ANOVA for the SCARED indicated a significant main effect for diagnostic group [F (2, 125) = 5.72, $p \leq .0063$] (Table 3). ANX+DEP reported significantly higher scores than both PUR-ANX and PUR-DEP. No differences were found between the latter two groups.

Maternal Reports

ANCOVAs for all measures yielded significant group differences (Table 2). Significant differences on the CBCL anxious/depressed scale [F (2, 116) = 8.92, $p \leq .0038$] were accounted for by higher scores for the ANX+DEP compared to both pure groups. On the CBCL withdrawn/depressed scale [F (2, 116) = 13.61, $p \leq .0038$], both ANX+DEP and PUR-DEP reported significantly higher scores than PUR-ANX, with no other group differences. Significant group differences on the SCARED [F (2, 141) = 7.25, $p \leq .0038$] were accounted for by higher scores for ANX-DEP than PUR-ANX and PUR-DEP, with no differences between pure groups.

Family Functioning Outcome Measures

An ANCOVA yielded significant differences between groups on the youth FAM [$F(2, 131) = 4.46, p \leq .025$] (Table 4). ANX+DEP reported significantly higher dysfunction than PUR-ANX, with no other group differences. An ANCOVA for the maternal FAM yielded no significant results (Table 4).

Discussion

Our findings support our main hypothesis: that the presence of comorbid depression (including subthreshold symptoms) in anxious youth would be associated with more severe reports of anxiety symptoms and family dysfunction, compared to anxiety disorders occurring alone. However, we did not obtain support for our hypothesis that the presence of comorbid anxiety (including subthreshold symptoms) in depressed youth would be associated with more severe reports of depressive symptoms and family dysfunction, compared to depressive disorders occurring alone. Our hypothesis that the depression-only group would be more similar to the comorbid group than the anxiety-only group, on reports of family functioning, was supported.

Table 2. ANCOVA results for internalizing symptom measures by group with age as covariate

	PUR-ANX			PUR-DEP			ANX+DEP					
Measure	*n*	M (SD)	*M***	*n*	M (SD)	*M***	*n*	M (SD)	*M***	*F*	*df*	*p* (alpha)
YSR anxious/depressed	17	62.06 (8.17)	63.50_a	19	61.53 (9.21)	60.80_a	21	73.86 (11.64)	73.35_b	10.15*	(2, 53)	.000 (.0038)
CBCL anxious/depressed	54	69.67 (10.76)	68.78_a	25	65.00 (9.30)	65.99_a	41	75.71 (11.42)	76.27_b	8.92*	(2, 116)	.000 (.0038)
CBCL withdrawn/depressed	53	61.40 (8.09)	61.02_a	26	69.08 (9.33)	69.48_b	41	71.34 (11.12)	71.57_b	13.61*	(2, 116)	.000 (.0038)
SCARED (maternal)	70	29.53 (12.70)	28.37_a	27	21.63 (12.67)	22.89_a	48	34.00 (15.86)	34.98_b	7.25*	(2, 141)	.001 (.0038)

Note. Groups in the same row with different subscripts are significantly different as determined by post hoc pairwise comparisons of adjusted means.

* *p* value ≤ alpha, alpha determined using Holm's sequential Bonferroni method to control for Type I error at .05 level across tests of internalizing symptom measures.

**Age-adjusted

Consistent with past studies of comorbidity (Bernstein, 1991; O'Neil et al., 2010; Strauss et al., 1988) and reports that prevalence of depression increases with age (Birmaher et al., 1996), ANX+DEP and PUR-DEP youth were significantly older than PUR-ANX youth. So that differences could not be attributed to age, we attempted to control for this variable in our analyses.

Both ANX+DEP youth and caregivers indicated significantly more severe ratings on the YSR and CBCL anxious/depressed scale than pure groups. Since this scale measures both anxiety and depression, our finding appears to validate the classification of comorbidity given to participants by clinicians.

In support of our hypothesis, on both youth and caregiver anxiety reports using the SCARED, ANX+DEP had significantly higher scores than both pure groups. Although it is not surprising that the ANX+DEP would report increased anxiety symptoms compared to the PUR-DEP, the increased anxiety symptoms in ANX+DEP, compared to PUR-ANX, lends support to the previous association found between comorbid depression and enhanced anxiety symptoms (Bernstein, 1991; Bernstein & Garfinkel, 1986; Franco et al., 2007; Masi et al., 2000; O'Neil et al., 2010; Strauss et al., 1988). Consistent with past studies (Bernstein, 1991; Puig-Antich & Rabinovich, 1986), there were no significant differences in reported anxiety symptoms between the PUR-ANX and PUR-DEP, suggesting that either anxiety scales contain items assessing both anxiety and depression or that anxiety and depressive disorders share a similar underlying diathesis (Seligman & Ollendick, 1998). Given that no trend was observed for PUR-DEP to endorse more anxiety symptoms than PUR-ANX, it is unlikely that the presence of depression alone accounts for the exacerbated reports of anxiety symptoms in ANX+DEP. Alternatively, it is possible that the co-occurrence of anxiety and depression represents a unique profile of anxiety characteristics, compared to anxiety symptoms occurring alone. For example, a subgroup of anxious youth with increased anxiety may be more prone to developing comorbid depression since more severe and impairing anxiety likely leads to increased feelings of helplessness and despair (Brady & Kendall, 1992).

The lack of a significant association between comorbid anxiety and reporting of enhanced depression symptoms does not support our hypothesis. It is consistent, however, with the findings of Bernstein and Garfinkel (1986) and Masi et al. (2001). Children's self-reports of depression symptoms on the CDI yielded a different pattern of results compared to adolescents' reports, with ANX+DEP adolescents reporting higher depression scores than ANX+DEP children. This finding suggests that the nature of comorbid anxiety and depression differs between childhood and adolescence and is associated with more severe self-reported depressive symptomology in older youth. Given our age and interaction effects with respect to depressive symptoms, future longitudinal studies should examine developmental effects and how the nature of comorbidity and its clinical correlates change over time.

Consistent with our hypothesis and past findings (Johnson et al., 2005; O'Neil et al., 2010; Stark et al., 1990; Starr & Davila, 2008), ANX+DEP youth endorsed higher family

Table 3. ANOVA means and standard deviations of internalizing symptom measures by group and age

Measure	Age/group	*n*	*M*	*SD*
SCARED (youth)				
	Child (<13 years)			
	PUR-ANX	40	27.20	10.01
	PUR-DEP	9	26.78	14.58
	ANX+DEP	16	29.50	13.85
	Adolescent (≥13 years)			
	PUR-ANX	15	26.80	16.94
	PUR-DEP	19	20.32	12.15
	ANX+DEP	32	37.56	11.60
	Total (all ages)			
	PUR-ANX	55	27.09	12.12
	PUR-DEP	28	22.39	13.07
	ANX+DEP	48	34.88	12.83
YSR withdrawn/ depressed	Child (years)			
	PUR-ANX	5	55.20	6.42
	PUR-DEP	4	67.25	18.12
	ANX+DEP	4	56.75	5.62
	Adolescent (≥13 years)			
	PUR-ANX	12	57.00	6.56
	PUR-DEP	16	63.25	9.62
	ANX+DEP	16	73.19	9.87
	Total (all ages)			
	PUR-ANX	17	56.47	6.37
	PUR-DEP	20	64.05	11.29
	ANX+DEP	20	69.90	11.29
CDI (youth)				
	Child (<13 years)			
	PUR-ANX	47	50.70	10.00
	PUR-DEP	10	65.60	17.93
	ANX+DEP	21	53.90	13.99
	Adolescent (≥13 years)			
	PUR-ANX	14	52.07	12.70
	PUR-DEP	16	65.31	11.60
	ANX+DEP	29	71.38	15.28
	Total (all ages)			
	PUR-ANX	61	51.02	10.58
	PUR-DEP	26	65.42	14.02
	ANX+DEP	50	64.04	17.01

dysfunction than PUR-ANX youth, with no differences between PUR-DEP and ANX+DEP. Similar to O'Neil et al.'s (2010) family functioning results, maternal reports on the FAM yielded no significant differences among groups. One explanation may be that families of diagnostic groups do not differ in actual functioning but the presence of depression causes youth to view their family more negatively. This phenomenon could be due to pessimistic and self-critical cognitive biases typically associated with depression (Beck, Brown, Steer, Eidelson, & Riskind, 1987). Alternatively, ANX+DEP youth may indeed have families with more dysfunction and may benefit from family-focused interventions. The fact that caregivers do not perceive this impairment may reflect miscommunication or a type of bias consistent with specific types of parenting that have been linked to anxiety and depression such as excessive control and rejection (Rapee, 1997). Our use of the brief FAM allows us only to speculate as to the types of family dysfunction associated with the presence of depression. Future studies would benefit from employing more comprehensive family functioning measures with subscales to link specific aspects of functioning to clinical manifestations in youth. Direct observation would also help to clarify discrepancies between youth and parent reports. It is beyond the scope of our study to address the directional relationship between family functioning and comorbidity. Longitudinal studies could shed light on whether family dysfunction contributes to comorbid depression in anxious youth, or vice versa, and would inform prevention strategies for comorbidity.

Groups did not differ on SES, sex, race, parental composition, or externalizing disorders, suggesting group differences are not attributable to such variables. Consistent with past findings (Bernstein, 1991; Last et al., 1997), ANX+DEP and PUR-DEP had more participants receiving prior treatment. ANX+DEP had significantly more participants, than PUR-ANX, taking psychotropic medication during study participation. Although treatment differences may relate to age (i.e., older participants have had more opportunities for treatment), differences may also relate to the more severe internalizing symptoms in groups receiving more treatment. Despite our results suggesting that comorbid youth may seek out or require more intensive interventions, treatment outcome studies often exclude individuals with comorbid presentations (Seligman & Ollendick,

Table 4. ANCOVA results for family functioning measures by group with age as covariate

	PUR-ANX			PUR-DEP			ANX+DEP					
Measure	*n*	M (SD)	*M***	*n*	M (SD)	*M***	*n*	M (SD)	*M***	*F*	*df*	*p* (alpha)
FAM (youth)	60	27.60 (6.01)	28.14_{a}	27	30.85 (5.69)	$30.45_{a,b}$	48	32.40 (6.24)	31.95_{b}	4.46*	(2, 131)	.013 (.025)
FAM (maternal)	76	26.91 (5.18)	27.49	25	28.20 (3.80)	27.51	45	29.96 (4.81)	29.36	2.24	(2, 142)	.110

Note. Groups in the same row with different subscripts are significantly different as determined by post hoc pairwise comparisons of adjusted means.

*p value ≤ alpha, alpha determined using Holm's sequential Bonferroni method to control for Type I error at .05 level across tests of family functioning measures.

**Age-adjusted

1998). Future controlled studies should examine youth with comorbid anxiety and depression, including those with subthreshold syndromes, to determine the types of therapy and medication to which they optimally respond.

Limitations

Analyses were conducted on subsets of the full participant sample that provided complete information for a particular measure. Consequently, results are not reflective of all participants. The difference in treatment history between our groups represents a confounding variable as it remains unclear whether our findings may be due to the effects of prior treatment. Information collected from participants regarding prior treatment did not include specifics as to type, length, or quality of treatment so analyses of treatment effects would have been difficult to interpret in this study. Since the presence of subthreshold symptoms was established according to clinicians' judgment, without specific criteria outlining such symptoms, results reflect naturalistic data typical of clinical settings. Future studies should employ more reliable criteria for determining subthreshold syndromes. Our comorbid group included youth with both a diagnosed anxiety and depressive disorder, as well as those with either disorder alone and comorbid subthreshold symptoms of the other. To establish firmer conclusions regarding the impact of comorbid subthreshold symptoms, future studies should examine each subset of youth separately. Future studies should also examine different disorders separately (e.g., Separation Anxiety vs. Generalized Anxiety), as well as gender effects as they relate to comorbidity. Our sample size precluded a valid comparison of these separate groups.

Conclusions

Comorbid depression in anxious youth, including when depression consists of subthreshold symptoms, is associated with increased anxiety and family dysfunction compared to anxiety alone. In contrast, the presence of anxiety in depressed youth, when anxiety includes subthreshold symptoms, is not clinically relevant to the degree of depression and family dysfunction experienced. Our findings suggest that clinicians should be vigilant when diagnosing anxiety in youth and should not ignore comorbid subthreshold depressive symptoms and the potential for increased anxiety and family dysfunction.

Acknowledgments / Conflicts of Interest

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