

FUNCTIONAL OUTCOMES OF YOUTHS TREATED FOR PEDIATRIC ANXIETY

DISORDERS:

A NATURALISTIC 3 -12 YEAR FOLLOW-UP

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ABSTRACT

Objective: To examine the impact of treatment outcome and treatment condition (Cognitive-behavioral therapy, CBT; Sertraline, SRT; COMB, CBT and SRT; Placebo) for youth treated for anxiety disorders on global and domain-specific functioning across a 3 to 12 year, naturalistic follow-up.

Method: A subset (319) of 488 families from the Child/Adolescent Anxiety Multimodal Study (CAMS; Walkup et al., 2008) participated in an average of 3.38 assessments during the follow-up period. All youth met criteria for a principal anxiety disorder pretreatment. Growth curve modeling examined the impact of treatment outcomes (response/remission) and treatment condition on global functioning, global and domain-specific impairment, and life satisfaction across the follow-up period. Logistic regression explored the impact of treatment response and condition on low frequency events (arrests/convictions) and educational achievement (high school graduation/college enrollment).

Results: Growth curve analyses revealed that treatment responders/remitters demonstrated better global functioning, increased life satisfaction, and decreased overall impairment at their first follow-up assessment (growth curve mean intercept). The positive effect of treatment response on life satisfaction, but not global functioning or overall impairment, attenuated across the follow-up period. Treatment response also predicted decreased academic impairment at first follow-up. Participants in the COMB condition demonstrated improved functional trajectories with regards to family life and academic grade-point average. CBT participants demonstrated a greater decline in overall impairment and problems with self-care/independence across the follow-up. Treatment

response and condition did not predict legal outcomes, school attendance, high school graduation, college attendance, occupational outcomes, or social/peer relationships.

Conclusion: Response to early intervention is associated with improved overall functioning, as well as functioning within specific domains (academics) 3 to 12 years posttreatment. Treatment type differentially predicted functional trajectories. Findings support the positive impact of pediatric anxiety treatment on functioning during adolescence and emerging adulthood.

Key words: Child anxiety, Emerging adulthood, Treatment, Functional outcomes,

Follow-up

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CHAPTER 1

MANUSCRIPT IN JOURNAL ARTICLE FORM

Functional Outcomes of Youths Treated for Pediatric Anxiety Disorders: A Naturalistic 3 -12 year Follow-up

Anxiety disorders are the most common psychological disorders to affect children and adolescents¹. Coupled with high prevalence rates, youth anxiety disorders are associated with impairment in academic, social, occupational, and family functioning, that, when left untreated, can extend into adulthood². Prior studies suggest that cognitive-behavioral therapy (CBT) and medication (e.g., sertraline: SRT) are efficacious in the treatment of youth anxiety disorders and reduce symptoms³. Some initial work examines impairment in global and domain-specific (e.g., academic, family, and social) functioning immediately following treatment². However, the impact of efficacious treatment in youth on functional outcomes as youth transition into adulthood remains unknown, particularly for youth treated with medication.

Prior to the Child/Adolescent Anxiety Multimodal Study (CAMS)³, several RCTs comparing medication versus placebo in the treatment of youth with generalized anxiety disorder (GAD), Social Phobia (SoP), and/or separation anxiety disorder (SAD) demonstrated these medications to be efficacious⁴. However, there have been no long-term follow-ups to these studies. In contrast, six studies have assessed >5-year post-treatment durability of CBT⁵⁻⁹ or CBT and SRT interventions¹⁰ for youth initially treated for anxiety. Of these studies, only three report an initial look at functional outcomes. One follow-up investigation of youth previously treated for GAD, SoP, and/or SAD reported that individuals who were less successfully treated (i.e., showed poor response) were more likely to use alcohol or marijuana and to suffer greater social and interpersonal

consequences as a result of drug use⁹. In a sample of 66 participants who received CBT for anxiety between 7 and 14, responder status (defined as absence of entry principal anxiety disorder at posttreatment) did not predict quality of life or overall impairment 7 to 19 years later⁷. Responder status (defined as “much improved” or “very much improved” on the Clinical Global Impression-Improvement Scale) did significantly predict global functioning 4 to 10 years later in a sample of 288 youth who participated in CAMS between 7 and 17; however, treatment condition (CBT, SRT, COMB: CBT and SRT, or pill placebo) did not differentially predict global functioning¹⁰. No other studies have examined the effect of treatment type (active versus control) on long-term functional outcomes. Moreover, all >5 year follow-up studies assessed distal outcomes at only one time-point, which does not allow for examination of the trajectories of change over time. To date, no studies have examined domain-specific functional outcomes for youth initially treated for anxiety with medication.

The current study is longitudinal and prospectively examines global (overall impairment, life satisfaction) and domain specific (social, familial, educational, occupational, legal) functional outcomes associated with the four treatment conditions (CBT, SRT, COMB, Placebo) provided in CAMS. Functional outcomes were assessed an average of 3.38 times during a naturalistic follow-up 3 to 12 years after treatment. We evaluate the impact of treatment response (i.e. responder, non-responder), remission status (operationalized as the loss of all study entry anxiety disorder diagnoses following acute treatment), and treatment type (i.e., CBT, SRT, COMB, Placebo) on functional outcomes over the follow-up period. We hypothesized that treatment responders and

remitters would report improved functional outcomes. The impact of treatment condition on functional outcomes was treated as exploratory given the dearth of prior research.

Method

Participants

Families who participated in CAMS and agreed to be contacted for future studies (465 out of 488 CAMS participants) were eligible for the Child/Adolescent Anxiety Multimodal Extended Long-term Study (CAMELS). Participants were included in CAMS if they (a) were between 7 and 17 years of age; (b) met criteria for a primary diagnosis of SAD, GAD, or SoP (*DSM-IV* criteria¹¹); (c) experienced substantial impairment associated with their anxiety disorder; and (d) had an IQ \geq 80. Participants were randomly assigned to their treatment condition: CBT, SRT, COMB, or pill placebo. CAMS recruitment occurred between 2002 and 2007. The methodology¹², participant features¹³ and primary outcomes³ are available.

Data analyzed in this study are from 319 participants who completed at least one CAMELS assessment. The CAMELS sample included 176 females (55.2%); the mean age at first assessment was 17.63 years (range 11.10 to 25.96 yrs). The racial and ethnic makeup was 81.5% white, 8.8% African American, 2.8% Asian, 1.6% Native American, and 5.3% other; 8.2% of the sample identified as Hispanic or Latino. Low SES was reported by 16.6% of the sample, as indicated by a score ranging from 8–39 on the Hollingshead Socioeconomic Status (SES) index.

Procedure

Recruitment. CAMS families who agreed to be contacted were asked to participate via letter and phone. Written consent was ascertained from all families.

Assessment Visits. Participants were contacted to complete one “long visit” and one “short visit” per year during the CAMELS follow-up period. For long visits, participants completed diagnostic interviews and self-report forms. During short visits, participants completed self-report questionnaires at home and participated in a telephone call to assess mental health service utilization. The current study uses long visit data (mean number of assessments per participant: 3.38). Independent evaluators (IE) blind to participants’ CAMS treatment condition administered the diagnostic interviews and completed clinician-rated measures. A Research Assistant (RA) met with the parent (or older adolescent) to collect demographics and mental/medical service use. Participants completed self-report measures. The RA supervised questionnaire administration. To facilitate participation for participants who relocated, some long assessments were via phone.

Data collection occurred at the six CAMS sites. Participants were compensated for their time (\$130 for long, and \$50 for short assessments). In the final year of data collection, compensation for long visits was increased to \$200. Transportation was reimbursed. All sites had institutional review board approval for this study.

Measures

Assessment instruments included semi-structured diagnostic interviews and other measures administered by the IE, as well as self-reports.

CAMS Baseline Assessment Measures

Anxiety Disorders Interview Schedule, Children/Parent version (ADIS-IV-C/P¹⁴).

The ADIS-IV-C/P are semi-structured diagnostic interviews to assess anxiety, mood disorders, and other psychopathology in accordance with the *DSM-IV*¹¹ as reported by

youth aged 7-17 years and their parents. The ADIS-IV-C/P demonstrates retest reliability for diagnostic ratings and clinician severity ratings (CSRs), based on both child and parent interviews (Intraclass Correlation Coefficient, ICC = 0.78 - 0.95¹⁵) as well as inter-rater reliability for individual anxiety ($\kappa = .8 - 1$) and comorbid disorders ($\kappa = 0.65 - 0.77$ ¹⁶). It has shown concurrent validity based on self-report measures of anxiety¹⁷⁻¹⁸, and is sensitive to treatment effects³. During the interviews, youth and their parents provided Global Interference Ratings (GIR) and diagnosticians provided Clinical Severity Ratings (CSR) for each diagnosis on a 9-point scale (0-8). A minimum CSR of 4 is required for a diagnosis. The parent-child composite diagnosis was used (based on CSRs endorsed during each interview and the “or” rule¹⁴). In the current study, the inter-rater agreement for diagnoses was ICC = 0.82-0.88 (based on a random review of 10% of baseline and week 12 videotaped assessments). Treatment remitters were operationalized as participants who no longer met criteria for any study-entry anxiety disorder (SAD, GAD, or social phobia) immediately following treatment.

Clinical Global Impression-Severity and Improvement Scales (CGI-S and I¹⁹).

The CGI-S score is a global rating of baseline severity (1=not at all ill; 7=extremely ill). The CGI-I is a global rating of improvement (1=Very Much Improved; 7=Very Much Worse). Treatment responders were operationalized to be participants who IEs rated as 1 “Very Much Improved” or 2 “Much Improved”. The CGI-I is related to self-report and other measures of symptomatology and functional impairment²⁰.

Follow-up Measures

Global Assessment of Functioning and Children's Global Assessment Scale (GAF, CGAS²¹). The GAF and CGAS are parallel child and adult forms that measure global

impairment and functioning over the previous month (1 is lowest and 100 is highest). The CGAS and GAF are commonly used and have inter-rater reliability (ICC = 0.53 - 0.66²²), retest reliability (ICC = .83²³), and validity as a measure of functional competence²⁴. IEs administered the CGAS and GAF.

Health of the Nation Outcome Scales (child, adolescent, and adult scales; HoNOS²⁵). The HoNOS scales are semistructured interviews that assess overall burden of psychiatric problems and impairment in functioning. The six single-item scales used assess: peer relationships, family life and relationships, self-care and independence, occupational functioning, academic performance, and school attendance. Functioning is scored 0 (no problems) to 4 (severe problems). For overall impairment, the average score of all relevant HoNOS subscales was calculated. The scale has shown inter-rater reliability of 0.63 to 0.96 for individual subscales and face validity²⁵, and sensitivity to change²⁶⁻²⁷. IEs administered the HoNOS.

Quality of Life Enjoyment and Satisfaction Questionnaires (child and adult versions; Q-LES-Q²⁸⁻²⁹). The Q-LES-Q are parallel self-reports used to measure quality of life and satisfaction for children and adults. Items inquire about satisfaction with health, mood/feelings, school, work, getting along with friends and with family, play/free time, sense of love for life, having enough money, place of residence, ability to pay attention, energy level, and overall course of life. Each item is rated from 1 (very poor) to 5 (very good). The average score measures overall life satisfaction. This instrument has been found to have internal consistency (Cronbach's $\alpha > .85$), retest reliability (ICC = 0.78²⁹), and sensitivity to treatment³⁰. In our sample, Cronbach's α ranged from 0.87 - 0.97 across visits. Youth completed the Q-LES-Q.

Education form. Youth self-reported educational outcomes, including their highest level of education, grade-point average (GPA), and the impact of anxiety on school performance rated from 0 “not at all” to 2 “very much”. Educational achievement was coded as (1) graduated high school, and (2) started college.

Legal Functioning. Legal functioning (legal arrest history and conviction history) was self-reported by youth.

Additional Measures

Demographic Information. Family composition, parental marital status, participant marital status, occupational status, family income, living arrangements, and SES (according to the Hollingshead index) were collected from parents (and older adolescents).

Mental Health Service Utilization. Mental health service utilization was measured using the ADIS Supplemental Services Form¹⁴ which assesses medication use and psychotherapy or counseling for mental health. Participants were divided into 4 groups at each assessment time-point: no medication or therapy since their last CAMELS assessment, medication only, therapy only, medication and therapy. Service utilization was dummy-coded with no medication or therapy as the reference group.

Data Analytic Plan

Data Management. Initial analyses compared baseline demographics (sex, age, ethnicity, SES) and clinical characteristics (anxiety severity: CGI-S; responder status: CGI-I, and remission status: loss of all study-entry anxiety disorders on the ADIS-IV-C/P) between CAMS participants who did and did not participate in CAMELS using *t* tests for continuous measures and χ^2 tests for categorical variables. The

CAMELS sample included more females, fewer Hispanics, and was of higher SES. There were also site differences in CAMELS recruitment. Accordingly, sex, ethnicity, SES, and site (dummy-coded with Duke as the reference group) were controlled in all analyses. Table 1.1 summarizes differences between participants who did and did not participate in CAMELS. Given that baseline anxiety severity predicted worse treatment outcomes in CAMS³¹, CGI-S was also controlled in all analyses.

Missing Values. Full information maximum likelihood (FIML) addressed missingness. Computer simulation studies have found special ML-based methods for incomplete data to outperform classic methods³². Overall rates of missing data on examined variables for the 319 CAMELS participants differed by assessment. All 319 participants completed a CAMELS visit 1. At visit 2, data were missing for 81/319 (25%) of participants; visit 3 for 100/319 (31%) participants; visit 4 for 112/319 (35%) participants; visit 5 for 228/319 (71%) participants. FIML is robust at handling missing data of these amounts given multiple assessments per participant³² (an average of 3.38 CAMELS visits). To examine patterns of missingness, a Poisson regression was run to examine the association between number of CAMELS visits completed and baseline demographic and clinical characteristics. Age at CAMS randomization, SES, and CGI-S were entered as continuous predictors. Treatment response, treatment remission, treatment condition, treatment site, gender, ethnicity, and race were entered as categorical model predictors. No examined variable significantly predicted number of CAMELS assessments completed. Data was assumed to be missing at random.

Data-analytic approach. A multilevel modeling (MLM) framework was used to estimate linear growth models. To accommodate repeated measures for individuals in real

time, analysis type was specified as TWOLEVEL and RANDOM in Mplus. MLM allows for the analysis of systematic changes in longitudinal data over time and permits the examination of intra-individual and inter-individual differences in change. Within this framework, change over time is estimated using: (1) initial levels at the starting point of the growth curve (growth intercept); and (2) the slope of the growth curve and the rate of change over time (linear slope). Separate models were fit for each continuous outcome variable.

First we computed an unconditional growth model, which includes parameters for the intercept (estimated score at CAMELS first assessment) and slope (rate of change over time) to evaluate functional trajectories over time. Significant variance in the slope indicates that individuals vary in their growth rates. To test the impact of treatment outcomes and condition, we then computed a conditional growth model for each functional outcome. For functional outcomes with nonsignificant slope variance in the unconditional model, we treated the slope as a fixed effect set at 0 in the conditional model. We examined level-2 predictors of slope in these cases given that slope may vary as a function of covariates in the conditional model, even when slope is non-significant in the unconditional model³³, and in keeping with prior research³⁴⁻³⁵. For unconditional models with a significant slope variance, we treated slope as a random effect in the conditional model.

Aim 1: The effect of treatment outcomes and treatment condition on global functioning, overall impairment, and life satisfaction. The MLM framework was used to estimate linear growth models in Mplus for: global functioning (CGAS/GAF scores), youth-reported life satisfaction (Q-LES-Q average score), and overall impairment

(HoNOS average score). Sex, ethnicity, SES, CAMS Site, CAMS baseline severity (CGI-S), treatment outcome (response/remission status), and treatment condition dummy-coded with the placebo condition as the reference group were entered as time invariant predictor variables. Given that functional outcomes are tied to developmental stage, age at first CAMELS assessment was also entered as a time invariant predictor. Mental health service utilization (ADIS supplemental services form), years since CAMS randomization, and time were entered as time-varying predictor variables. Time was coded so that the intercepts of participants' growth curves reflected their estimated scores at the first CAMELS assessment. Response status and treatment condition were examined as predictors of the intercept and linear slope for individual functional outcomes. Separate models were conducted for response and remission status. We hypothesized that treatment responders and remitters would demonstrate improved functional outcomes. The effect of treatment condition on functional outcomes was treated as an exploratory aim, and no directional hypotheses were made.

Aim 2: The effect of treatment response and treatment condition on domain-specific functional and legal outcomes. We computed linear growth models within the MLM framework to test the impact of treatment response and condition on domain-specific functional outcomes measured by the HoNOS subscales, and the education form. Sex, ethnicity, SES, CAMS Site, CGI-S, age at first CAMELS assessment, response status, and treatment condition were entered as time-invariant predictors. Mental health service utilization, years since CAMS randomization, and time were entered as time-variant predictors. Time was again coded for growth curve intercepts to reflect participants' estimated scores at their first CAMELS assessment. Separate models were

fit for each HoNOS subscale and selected variables from the education form (GPA, the impact of anxiety on academic performance). For the HoNOS subscale assessing occupational impairment, only participants who self-reported having a job ($n = 223$) were selected for analyses. To assess legal outcomes, we conducted logistic regressions to examine the impact of treatment response and condition on the likelihood of participants reporting an arrest or conviction record at any CAMELS assessment, measured by the legal information form, controlling for sex, ethnicity, SES, CAMS Site, CGI-S, and mental health service utilization at first CAMELS assessment. 5.5% of the sample reported having an arrest record, and 2.3% reported being convicted of a crime at any point across the CAMELS follow-up period. Given the low frequency of arrests and convictions reported at individual CAMELS assessments, MLM models were inappropriate (unable to terminate). We hypothesized that responders would demonstrate improved outcomes. The effect of treatment condition on domain-specific outcomes was treated as an exploratory aim, and no directional hypotheses were made.

Aim 3: The effect of treatment response and condition on the achievement of developmental milestones.

To test educational achievement hypotheses, we selected participants aged 19 or older for analyses. Given that some youth are 18 in their senior year of high school, 19 was used as the cut-off age to assess educational milestones: We conducted logistic regressions to examine treatment response and condition as predictors of (1) high school graduation and (2) college enrollment at participants' first assessment at age 19 or older ($m = 20.88$ years, $SD = 1.77$). Logistic regressions were conducted separately for each outcome variable, and all analyses controlled for age at time of assessment, sex, ethnicity,

SES, CAMS Site, and CGI-S.

We estimated linear growth models within the MLM framework, as previously described, to examine the effect of response status, treatment condition, and the interaction between age and response status on the achievement of developmental milestones (employment and living independently from parents). In Step 1, sex, ethnicity, SES, CAMS Site, CGI-S, age at first CAMELS assessment, response status, and treatment condition were entered as time-invariant predictors. Mental health service utilization, years since CAMS randomization, and time were entered as time-variant predictors. In Step 2, we entered the interaction between age at first CAMELS assessment and response status as an additional time-invariant predictor of outcome. Separate models were fit for each categorical outcome.

Results

Means and standard deviations of outcome variables and time-varying predictor variables at each assessment are in Table 1.2. The results of the unconditional growth curve models are presented in Table 1.3. The slope of impairment in self-reported school performance was negative and significantly different from 0, indicating a decline in school-related impairment on average over time. For independent living, the slope growth factor was positive and significantly different from 0: Participants were more likely to live independently across visits. For family life and relationships, the slope growth factor was negative, indicating decreased impairment in family life across visits. The slope growth factor was not significantly different from 0 for any other outcome measure. The slope variance was significant for CGAS/GAF and self-reported impairment in school functioning scores, indicating between person variability in growth

rates. For all other outcome measures, slope variance was not significant; therefore, the effect of slope was treated as a fixed effect set at 0 in the conditional models. The intercept variance was significant for all outcome measures, indicating between-person variability in participants' initial scores.

Aim 1: The effect of treatment outcomes and treatment condition on global functioning, overall impairment, and life satisfaction

Results of linear growth models examining the effect of treatment outcomes (response and remission status) and treatment condition on global functioning (CGAS/GAF scores), life satisfaction (Q-LES-Q), and average impairment across domains (HoNOS average item score) are summarized in Table 1.4. Consistent with hypotheses, response and remission status significantly predicted global functioning an average of 6.5 years later at participants' first CAMELs assessment (intercept). Favorable acute treatment outcomes predicted improved global functioning that was maintained across visits. Treatment outcome did not significantly predict differing rates of change in global functioning across the follow-up period (slope). CAMS treatment condition predicted neither the intercept nor slope of CGAS scores across the follow-up period.

Latent growth curve models testing the effect of treatment outcomes and condition on youth-reported life satisfaction revealed treatment response and remission status to significantly predict Q-LES-Q scores at initial CAMELs assessment. In support of study hypotheses, participants who responded favorably to anxiety intervention as a child or adolescent reported increased life satisfaction an average of 6.5 years later. Treatment response, but not remission, significantly predicted differences in the slope of

life satisfaction scores across the follow-up period (see Figure 1.1). Responders demonstrated a decline in life satisfaction scores over time: At first CAMELS assessment, responders reported increased life satisfaction compared to non-responders, but the positive effect of treatment response (not remission) on life satisfaction attenuated across visits. Treatment condition predicted neither initial life satisfaction scores nor trajectories of life satisfaction scores across the follow-up period.

Consistent with hypotheses, treatment response and remission significantly predicted average functional impairment (HoNOS average score) at initial CAMELS assessment (intercept). Participants with favorable treatment outcomes were consistently rated as less impaired across domains compared to nonresponders and nonremitters across follow-up visits. Neither response nor remission predicted differing rate of change over time. In the linear growth model examining the impact of response status and treatment condition on overall impairment, participants in the CBT condition demonstrated a faster decline in HoNOS scores across the follow-up period compared to participants assigned to the placebo treatment condition. No other active treatment conditions were significantly different from the placebo group in predicting overall impairment across the CAMELS follow-up period.

Aim 2: The effect of treatment response and treatment condition on domain-specific functional and legal outcomes

Results of linear growth models assessing the impact of CAMS treatment response and condition on domain-specific functioning are summarized in Table 1.5. Within the academic domain, response status significantly predicted impairment in academic performance, but not school attendance, at first CAMELS assessment

(intercept) as assessed via the IE administered HoNOS subscale and the self-report education form. Responders demonstrated decreased academic impairment. Response status did not significantly predict the slope of academic impairment scores across the follow-up period. Treatment condition predicted neither initial academic impairment scores, nor trajectories of change. Self-reported GPA also was examined as an indicator of academic achievement. Participants randomized to the combined CBT and SRT treatment condition demonstrated significantly greater increases in GPA over time compared to participants who received a pill placebo. Neither treatment condition nor response status predicted significant differences in GPA at participants' first CAMELs assessment (intercept).

Within the domain of family life and relationships, participants in the combined CBT and SRT treatment condition demonstrated improved functional trajectories (slope) compared to participants in the pill placebo condition. Participants who received combined treatment demonstrated a faster decline in familial impairment over time. Contrary to hypotheses, response status and treatment condition did not significantly predict initial scores of family-related functional impairment or, with the exception of the COMB treatment condition, trajectories of change.

With regards to self-care and independence (problems with daily living), response status significantly predicted neither initial scores (intercept) nor trajectories of change (slope) across the follow-up period; however, participants assigned to the CBT treatment condition demonstrated a significantly steeper decline in impairment across the follow-up period compared to those in the placebo condition. No other active treatment condition significantly predicted differences in impairment within this domain.

Contrary to study hypotheses, neither treatment response nor condition predicted differences in social or occupational functioning. Logistic regression analyses revealed that neither treatment response nor treatment condition significantly increased the odds of participants having an arrest or conviction record at any point during the follow-up period. Results are summarized in Table 1.6.

Aim 3: The effect of treatment response and condition on the achievement of developmental milestones

Logistic regressions examined the impact of treatment response and condition on the likelihood of high school graduation and college enrollment at participants' first CAMELS assessment when they were 19 or older ($n = 181$, $m = 20.88$ years, $SD = 1.77$). 93.2% of participants reported graduating high school, and 80.1% reported starting college. Neither treatment response nor condition significantly predicted the likelihood of high school graduation or college enrollment. Of the control variables, SES significantly predicted outcomes: Participants with higher SES were more likely to graduate high school (OR = 1.11, 95 CI = 0.11, 15.77, $p < .01$) and to start college (OR = 1.06, 95 CI = 1.01, 1.10, $p < .01$).

At CAMELS enrollment, 53.2% of youth reported having a job, and 9.2% of youth reported living away from their parents. The likelihood of participants achieving independent living, but not employment, increased over the CAMELS follow-up period. Response status and treatment condition did not predict the likelihood of participants living independently at their first CAMELS assessment; however, response status and age interacted to significantly predict change trajectories. Participants who were young at their first CAMELS assessment and responded to treatment were more likely to achieve

independent living over the course of the CAMELS follow-up period compared to young non-responders ($t(303) = -2.54, p < .01$), and participants who were 1 standard deviation above the mean age at their first CAMELS assessment, $t(303) = 3.19, p < .01$ and $t(303) = -1.27, p < .01$ for old responders and nonresponders respectively (see Figure 1.2). Treatment condition, response status, and the interaction between age and response status did not predict employment outcomes. Results are summarized in Table 1.7.

Discussion

This study examined functional outcomes in youths treated for anxiety disorders across a naturalistic follow-up period of 3 to 12 years; the findings indicate that there were meaningful positive long-term functional benefits. This first study to examine the impact of treatment response and treatment type (CBT, SRT, COMB, pill placebo) on functioning identified differential global and domain-specific functional outcomes across multiple follow-up assessments during the transition from adolescence to adulthood.

Anxiety can be seen as a gateway disorder³⁶, and youth anxiety is associated with short- and long-term sequelae². The present results indicate that successfully treating a principal disorder (anxiety) has beneficial effects on subsequent functioning, including improved global functioning, and decreased overall impairment an average of 6.5 years after CAMS randomization. The positive impact of favorable treatment outcomes on improved global functioning and decreased overall anxiety impairment was maintained across the follow-up period. Prior research suggests that individuals with anxiety report decreased self-efficacy in new situations³⁷. Throughout development, anxious youth may have difficulty adjusting to changing roles and expectations, thus yielding decreased life

satisfaction and impaired functioning. Study results suggest that effective early intervention mitigates this relationship and has a positive effect on overall functioning.

Emerging adulthood, defined as the developmental period from late teens to early 20s, is associated with increased independence from caregivers, identity development³⁸, and increased life satisfaction³⁹; however, anxious youth may be avoidant of and less likely to explore educational and career options, as well as romantic partnerships in early adulthood, resulting in few opportunities to find a satisfying match within these domains⁴⁰. Results revealed that favorable youth treatment outcomes resulted in enhanced life satisfaction at first CAMELS visit. The positive effect of response (but not remission) status attenuated across time, indicating that early intervention resulting in the *remission* of youth anxiety (a stricter measure of anxiety reduction than treatment response) is associated with increased life satisfaction that is maintained over time.

As anxious youth enter adulthood, fear and avoidance of new situations may interfere with the achievement of important developmental tasks (e.g., independent living⁴¹). Study results revealed that response status and age interacted to predict the likelihood of participants living independently across the follow-up period: Treatment responders who were young at their first CAMELS assessment (thus likely to be living with their parents) demonstrated a sharper increase in rates of independent living over time compared to young participants who did not respond to treatment.

Prior research supports the relationship between youth anxiety and increased academic impairment⁴²: Youth who experience excessive fear and anxiety at school may be avoidant of and have difficulty concentrating on lessons and assignments⁴³. Results suggest that response to early intervention is associated with decreased academic

impairment during emerging adulthood: Positive treatment response predicted decreased academic impairment (rated by participants and by IEs) an average of 6.5 years post CAMS randomization. Response status did not significantly predict GPA.

Research findings on the impact of anxiety on highest grade completed are mixed: Some studies support a relationship between youth anxiety disorders and decreased university attendance⁴⁴; others do not⁴⁵. In the current study, SES, but not response status, significantly predicted educational achievement (high school graduation/college enrollment), suggesting that the several features that comprise SES (e. g., income) are meaningful predictors of educational status above youth anxiety symptomatology.

Response status did not significantly predict problems with daily living, occupational, family, or social impairment. Given research indicating that social anxiety specifically, rather than anxiety disorders in general, is associated with youth social impairment⁴⁶, future research examining response status and specific anxiety disorder diagnoses on social functioning merits further research. Similarly, response status did not predict legal outcomes. Of note, the frequency of participants reporting an arrest or conviction was low (5.5% and 2.3% respectively), and this may explain the nonmeaningful findings. Moreover, prior research suggests that anxiety alone does not confer increased risk for criminal behavior, only anxiety in conjunction with substance use⁴⁷. Future work examining how proximal factors (e.g., substance use, anxiety disorder, comorbid diagnoses) impact domain-specific functional outcomes is warranted.

Is there a differential effect of CAMS treatment condition on functional outcomes? CAMS treatment condition did not significantly predict the initial assessment of functional outcomes, but the CBT and COMB treatments (as compared to the placebo

condition) significantly predicted trajectories of change for some functional outcomes. Participants who received CBT demonstrated a faster decline in overall impairment and problems with daily living (self-care and independence) across the follow-up. Participants in the COMB condition demonstrated greater increases in GPA over time and decreased family impairment across the follow-up period. Results support the increased positive effect of active treatment compared to pill placebo on these functional trajectories. Participants assigned to CBT or COMB treatment may have applied skills learned in therapy to novel challenges, thus improving functional outcomes over time. The effect of treatment condition on functional outcomes was an exploratory aim, and results merit replication. Further research examining mechanisms of change (cognitive, behavioral, affective, and/or biological) is warranted to clarify what features of early effective intervention contributed to increasing positive outcomes.

The study benefited from a number of methodological strengths. The study design was prospective and longitudinal, and functional outcomes were assessed via IE and self-reports an average of 3.38 times. We examined (1) outcomes at first CAMELS assessment, and (2) trajectories of change across the follow-up period. Moreover, the study benefitted from a multi-site design and sufficient sample size.

Limitations are worth noting. The study employed a naturalistic design, which prohibits causal claims between CAMS treatment and later outcomes. To address this concern, mental health service utilization was measured and controlled for in all analyses. It remains possible that unexamined variables may explain some of the results. Additionally, the CAMELS sample represented only 65% of the original CAMS sample, and was comprised of more females, fewer Hispanics and was of higher SES. Predictors

of differences between CAMS and CAMELS participants were controlled for in all analyses. However, given that demographic characteristics may be predictive of educational, occupational, and other functional outcomes, it is possible that the CAMELS sample failed to capture the full range of CAMS participant outcomes. The current study restricted predictors of functional outcomes to CAMS treatment response and condition. Given that youth anxiety disorders have been linked to continued anxiety impairment in adulthood, and the development of commonly comorbid concerns (e.g., depression⁴⁸), future research aims to examine the relationship between concurrent psychopathology and functioning during the follow-up period, the interaction between response status and treatment condition, and additional moderators and mediators between response status and functional outcomes.

Endnotes

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Table 1.1 Comparison of CAMELS participants and non-participants.

	CAMELS Participants (<i>n</i> = 319)	Non Participants (<i>n</i> = 169)	Statistic
Female, %	55.20%	39.10%	11.48** ^a
Baseline Age, <i>M</i> (SD)	10.63 (2.79)	10.81 (2.81)	0.66 ^b
Ethnicity (Hispanic)	8.20%	19.50%	13.45*** ^a
Race (non-white), %	18.50%	26.00%	3.78 ^a
Hollingshead SES, <i>M</i> (SD)	49.70 (10.99)	44.45 (12.07)	-4.84*** ^b
Baseline CAMS CGI-S Score, <i>M</i> (SD)	5.01 (.71)	5.05 (.76)	0.58 ^b
Baseline CAMS CGAS score, <i>M</i> (SD)	50.45 (7.17)	51.21 (6.99)	1.13 ^b
CAMS Remission (Week 12), %	54.30%	50.70%	0.49 ^a
CAMS Remission (Week 36), %	68.20%	68.60%	0.01 ^b
CAMS Response (Week 12), %	66.40%	60.90%	1.29 ^b
CAMS Response (Week 36), %	78.50%	77.40%	0.06 ^b

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. ^aFrom χ^2 test. ^bFrom t test. Rates of randomly assigned treatment condition did not vary $\chi^2(3) = .76$. There was a significant difference in CAMELS participation by site, $\chi^2(5) = 17.34^{**}$.

Table 1.2. Means and Standard Deviations of the Mean for Outcome Measures and Time-Varying Predictors

Variable	Visit 1 <i>n</i> = 319		Visit 2 <i>n</i> = 238		Visit 3 <i>n</i> = 219		Visit 4 <i>n</i> = 207		Visit 5 <i>n</i> = 91	
	<i>m</i>	<i>SD</i>	<i>m</i>	<i>SD</i>	<i>m</i>	<i>SD</i>	<i>m</i>	<i>SD</i>	<i>m</i>	<i>SD</i>
Age	17.63	(3.41)	18.29	(3.38)	19.15	(3.31)	20.09	(3.23)	19.93	(3.00)
Years since CAMS	6.52	(1.65)	7.23	(1.68)	8.09	(1.45)	9.04	(1.37)	9.28	(1.22)
CGAS/GAF	62.84	(13.57)	63.61	(14.38)	61.43	(13.83)	63.44	(14.70)	64.15	(14.93)
Q-LES-Q	3.80	(0.68)	3.81	(0.74)	3.82	(0.72)	3.84	(0.71)	3.85	(0.65)
HoNOS										
HoNOS Avg	0.80	(0.68)	0.68	(0.66)	0.73	(0.73)	0.71	(0.67)	0.63	(0.61)
HoNOS1	1.16	(1.17)	1.14	(1.19)	1.05	(1.21)	1.06	(1.19)	0.91	(1.07)
HoNOS2	1.22	(1.18)	0.99	(1.08)	0.96	(1.09)	0.88	(1.04)	0.91	(1.06)
HoNOS3	0.59	(0.86)	0.51	(0.80)	0.60	(0.82)	0.66	(0.85)	0.59	(0.86)
HoNOS4	0.64	(1.02)	0.46	(0.88)	0.61	(1.05)	0.45	(0.87)	0.50	(0.91)
HoNOS5	0.36	(0.90)	0.21	(0.70)	0.32	(0.79)	0.36	(0.82)	0.35	(0.86)
HoNOS6	0.30	(0.76)	0.25	(0.67)	0.32	(0.78)	0.35	(0.78)	0.23	(0.54)
EDUC										
Academic Performance	0.64	(0.70)	0.43	(0.61)	0.43	(0.64)	0.41	(0.65)	0.41	(0.64)
GPA	3.05	(0.84)	3.22	(0.62)	3.24	(0.69)	3.27	(0.62)	3.36	(0.50)
	Percentage		Percentage		Percentage		Percentage		Percentage	
LIF										
Arrest record, %	4.40		4.10		3.50		4.30		2.40	
Conviction, %	1.00		0.90		2.00		1.10		0.00	
Developmental Milestones										
Employed, %	53.20		48.60		54.30		63.30		70.20	
Independent living, %	9.20		10.10		13.10		23.60		17.60	
High school graduate, %	37.00		44.20		49.70		64.50		66.70	
Started college, %	29.30		36.30		41.60		50.50		58.30	

ADIS SSF

PSYC Tx, %	7.50	5.70	6.50	4.30	8.90
MED Tx, %	16.30	19.20	21.50	20.30	13.30
COMB Tx, %	45.90	20.10	24.30	23.20	28.90
No Tx, %	30.30	55.00	47.70	52.20	48.90

Note. ADIS SSF = Anxiety Disorders Interview Schedule; Supplemental Services Form; Psyc Tx = Received only interim psychotherapy services; Med Tx = Received only interim medication for mental health; COMB Tx = Interim Med and PSYC; No Tx = no reported interim mental health services; CGAS/GAF = Children's Global Assessment Scale and Global Assessment of Functioning, higher scores indicate better functioning; Q-LES-Q = Quality of Life Enjoyment and Satisfaction Questionnaires (child report), higher scores indicate greater life satisfaction; avg = average item score; HoNOS = Health of the Nation Outcome Scales, higher scores indicate greater impairment; HONOS1 = Problems with Social/Peer Relationships; HONOS2 = Problems with Family Life and Relationships; HONOS3 = Problems with Activities of Daily Living; HONOS4 = Problems with Scholastic or Language Skills; HONOS5 = Poor School Attendance; HONOS6 = Problems with Occupation and Activities; LIF = Legal Information Form; EDUC = Education Form; Academic Performance = Problems with performance due to anxiety, GPA = grade point average; *m* = mean; *SD* = standard deviation; % = percentage.

Table 1.3 Unconditional growth models for global and domain-specific functioning

Maximum Likelihood Effects						
Primary Outcomes			Education Form			
Effect	CGAS/GAF Estimate (SE)	Q-LES-Q Estimate (SE)	Average HoNOS Estimate (SE)	Impairment in school performance Estimate (SE)	GPA Estimate (SE)	Independent living Estimate (SE)
Intercept	62.83 (0.76)***	3.79 (0.04)***	0.78 (0.04)***	0.59 (0.04)***	3.09 (0.05)***	--
Slope	-0.53 (0.29)	0.00 (0.01)	-0.02 (0.01)	-0.05 (0.02)**	0.03 (0.02)	0.70 (.20)***
Var						
(Intercept)	119.02 (11.68) ***	0.29 (0.04)***	0.25 (0.03)***	0.19 (0.03)***	0.36 (0.07)***	14.56 (5.98)*
Var (Slope)	7.62 (1.48)***	0.00 (0.00)	0.00 (0.00)	0.01 (0.01)**	0.01 (0.01)	0.46 (0.50)
HoNOS Subscales						
Effect	Social/Peer Relationships Estimate (SE)	Family life/ Relationships Estimate (SE)	Activities of daily living Estimate (SE)	Academic functioning Estimate (SE)	School Attendance Estimate (SE)	Occupation/ Activities (n=223) Estimate (SE)
Intercept	1.16 (0.06)***	1.16 (0.06)***	0.56 (0.04)***	0.59 (0.05)***	0.31 (0.05)***	0.27 (0.05)***
Slope	0.01 (0.01)	-0.08 (0.02)	0.02 (0.02)	0.00 (0.01)	0.01 (0.02)	0.02 (0.02)
Var						
(Intercept)	0.68 (0.07)***	0.68 (0.07)***	0.27 (0.04)***	0.34 (0.06)***	0.14 (0.05)**	0.09 (0.05)*
Var (Slope)	0.01 (0.01)	0.01 (0.01)	0.00 (0.01)	0.00 (0.01)	0.02 (0.01)	0.00 (0.01)

Note. CGAS/GAF = Children's Global Assessment Scale and Global Assessment of Functioning; Q-LES-Q = Quality of Life Employment and Satisfaction Questionnaires; HoNOS = Average score on the Health of the Nation Outcome Scales, Average HoNOS = Average score across all subscales; higher numbers indicate greater impairment; GPA = Grade-point average; Var = Residual Variance; *** p<.001; ** p<.01; * p<.05.

Table 1.4. Growth curve models testing the effect of treatment outcomes (response/remission) and treatment condition on global functional outcomes
Maximum Likelihood Effects

Effect	Response			Remission		
	CGAS/GAF Estimate (SE)	Q-LES-Q Estimate (SE)	Average HoNOS Estimate (SE)	CGAS/GAF Effect	Q-LES-Q Effect	Average HoNOS Effect
Intercept	62.68 (0.91)***	3.80 (0.05)***	0.77 (0.05)***	62.75 (0.90)***	3.81 (0.05)***	0.77 (0.05)***
Slope	-0.26 (0.55)	-0.01 (0.03)	-0.01 (0.03)	-0.32 (0.55)	-0.02 (0.03)	-0.01 (0.03)
Var (Intercept)	81.99 (8.85)***	0.23 (0.03)***	0.19 (0.03)***	80.56 (8.69)***	0.22 (0.03)***	0.19 (0.03)***
Var (Slope)	4.60 (1.18)***	0.00 (0.00)	0.00 (0.00)	4.57 (1.19)***	0.00 (0.00)	0.00 (0.00)
<i>Predictors of Intercept</i>						
Response status	3.64 (1.54)*	0.28 (0.09)*	-0.17 (0.08)*	Remission status	4.25 (1.43)**	0.27 (0.08)**
COMB Tx	0.52 (2.17)	-0.10 (0.11)	-0.01 (0.11)	COMB Tx	0.76 (2.09)	-0.06 (0.11)
SRT Tx	1.41 (2.07)	0.02 (0.10)	-0.05 (0.10)	SRT Tx	1.51 (2.06)	0.04 (0.10)
CBT Tx	0.64 (2.13)	-0.01 (0.12)	-0.02 (0.11)	CBT Tx	0.99 (2.08)	0.03 (0.11)
<i>Predictors of slope</i>						
Response status	-0.60 (0.65)	-0.07 (.03)*	0.01 (0.03)	Remission status	-0.27 (0.61)	-0.03 (0.03)
COMB Tx	0.40 (.89)	0.05 (0.04)	-0.02 (0.04)	COMB Tx	0.18 (0.83)	0.03 (0.04)
SRT Tx	0.54 (0.80)	0.00 (0.04)	-0.04 (0.03)	SRT Tx	0.46 (0.80)	-0.01 (0.04)
CBT Tx	1.32 (0.84)	0.07 (0.04)	-0.07 (0.04)*	CBT Tx	1.19 (0.84)	0.05 (0.04)

Note. Note. CGAS/GAF = Children's Global Assessment Scale and Global Assessment of Functioning; Q-LES-Q = Quality of Life Enjoyment and Satisfaction Questionnaire; HoNOS = Average score on the Health of the Nation Outcome Scales, Average HoNOS = Average score across all subscales; higher numbers indicate greater impairment; Var = Residual Variance; COMB tx = CAMS medication and therapy treatment condition; SRT tx = CAMS medication treatment condition; CBT tx = CAMS therapy treatment condition; *** $p < .001$; ** $p < .01$; * $p < .05$.

Table 1.5. Growth curve models testing the effect of response status and treatment condition on domain-specific functional outcome scores

		HoNOS subscales						Education Form	
Effect	Estimate (SE)	Social/Peer Relationships (n=319)	Family life/ Relationships (n=319)	Activities of daily living (n=319)	Academic functioning (n=319)	School Attendance (n=319)	Occupation/ Activities (n=223)	School performance	GPA
		Estimate (SE)	Estimate (SE)	Estimate (SE)	Estimate (SE)	Estimate (SE)	Estimate (SE)	Estimate (SE)	Estimate (SE)
Intercept	1.09 (0.08)***	1.22 (0.08)***	0.54 (0.05)***	0.58 (0.07)***	0.25 (0.06)***	0.19 (0.07)**	0.57 (0.05)***	3.13 (0.06)***	
Slope	0.02 (0.05)	-0.13 (0.04)**	0.03 (0.03)	-0.06 (0.04)	0.06 (0.04)	0.02 (0.04)	-0.04 (0.03)	0.01 (0.04)	
Var (Intercept)	0.50 (0.06)***	0.39 (0.06)***	0.20 (0.04)***	0.26 (0.05)***	0.13 (0.04)**	0.10 (0.05)*	0.13 (0.02)***	0.30 (0.05)***	
Var (Slope)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.01 (0.00)	0.00 (0.00)	
<i>Predictors of intercept</i>									
Response status	-0.30 (0.15)	-0.26 (0.14)	-0.17 (0.09)	-0.26 (0.13)*	0.07 (.11)	0.16 (0.18)	-0.19 (0.09)*	0.07 (0.12)	
COMB Tx	-0.16 (0.21)	0.19 (0.21)	0.03 (0.14)	0.14 (0.20)	0.01 (0.15)	-0.02 (0.19)	-0.04 (0.13)	-0.15 (0.14)	
SRT Tx	-0.16 (0.20)	0.05 (0.18)	-0.09 (0.13)	0.03 (0.18)	0.09 (0.15)	-0.16 (0.19)	-0.10 (0.12)	-0.18 (0.14)	
CBT Tx	-0.12 (0.21)	0.07 (0.19)	0.08 (0.14)	0.09 (0.18)	-0.14 (0.14)	0.16 (0.26)	-0.03 (0.12)	-0.05 (0.14)	
<i>Predictors of slope</i>									
Response status	0.00 (0.05)	0.08 (0.05)	0.00 (0.04)	0.00 (0.05)	-0.06 (0.05)	0.06 (0.08)	0.01 (0.04)	-0.08 (0.05)	
COMB Tx	0.01 (0.07)	-0.20 (0.09)*	-0.02 (0.06)	-0.02 (0.08)	0.06 (0.08)	0.01 (0.08)	0.03 (0.06)	0.13 (0.06)*	
SRT Tx	-0.05 (0.07)	-0.12 (0.08)	-0.06 (0.05)	0.04 (0.08)	-0.02 (0.06)	0.01 (0.09)	-0.01 (0.06)	0.11 (0.06)	
CBT Tx	-0.05 (0.07)	-0.13 (0.08)	-0.14 (0.05)*	-0.13 (0.08)	0.08 (0.07)	0.02 (0.04)	0.00 (0.06)	0.08 (0.06)	

Note. HoNOS = Health of the Nation Outcome Scales, higher scores indicate greater impairment; Var = Residual Variance; COMB tx = CAMS medication and therapy treatment condition; SRT tx = CAMS medication treatment condition; CBT tx = CAMS therapy treatment condition. *** $p < .001$; ** $p < .01$; * $p < .05$.

Table 1.6 Logistic regression testing the effect of response status and treatment condition on legal outcomes and education achievement.

	Legal Outcomes					
	Arrest record		Conviction record			
	Odds Ratio	95% CI	<i>p</i> value	Odds Ratio	95% CI	<i>p</i> value
Response Status	0.58	0.15, 2.16	0.41	5.40	0.41, 71.09	0.20
COMB tx	1.37	0.18, 10.21	0.76	0.17	0.01, 2.05	0.16
SRT tx	0.61	0.08, 4.41	0.62	0.06	0.00, 1.41	0.08
CBT tx	1.20	0.19, 7.73	0.85	0.06	0.00, 1.44	0.08
	Model $\chi^2 = 23.26, p < .05$; Pseudo $R^2 = 0.08$			Model $\chi^2 = 19.36, p = 0.11$; Pseudo $R^2 = 0.06$		
Educational Achievement						
	High-School Graduate			Started College		
	Odds Ratio	95% CI	<i>p</i> value	Odds Ratio	95% CI	<i>p</i> value
Response Status	5.11	0.73, 35.92	0.10	1.14	0.39, 3.37	0.81
COMB tx	0	0, 0	1.00	0.28	0.05, 1.61	0.16
SRT tx	0	0, 0	1.00	0.78	0.15, 4.22	0.78
CBT tx	0	0, 0	1.00	0.58	0.11, 2.98	0.51
	Model $\chi^2 = 24.11, p < .05$; Pseudo $R^2 = 0.15$			Model $\chi^2 = 24.31, p < .05$; Pseudo $R^2 = 0.15$		

Note. COMB tx = CAMS medication and therapy treatment condition, SRT tx = CAMS medication treatment condition, CBT tx = CAMS therapy treatment condition, Arrest or conviction: 0 = no record, 1 = record, High school graduation or college enrollment: 0 = no, 1 = yes.

Table 1.7. Growth curve model of the interaction between age and response status on developmental milestone achievement

		Maximum Likelihood Effects	
		Independent living	Employment
<i>Step 1</i>			
Effect			
	Slope	0.78 (0.25)**	0.22 (0.15)
	Var (Intercept)	4.63 (2.08)*	2.68 (0.96)**
<i>Predictors of Intercept</i>	Response status	-0.99 (0.78)	0.54 (0.34)
	Age	0.66 (0.12)***	0.48 (0.13)***
	COMB Tx	0.52 (0.91)	0.16 (0.56)
	SRT Tx	-0.30 (0.80)	-0.59 (0.48)
<i>Predictors of Slope</i>	CBT Tx	-0.82 (0.87)	0.02 (0.50)
	Response status	0.00 (0.30)	0.14 (0.11)
	Age	0.00 (0.05)	-0.06 (0.02)***
	COMB Tx	0.00 (0.29)	-0.06 (0.14)
	SRT Tx	0.00 (0.16)	0.01 (0.13)
	CBT Tx	0.00 (0.16)	0.06 (0.14)
<i>Step 2</i>			
Effect			
	Slope	0.73 (0.27)	0.22 (0.24)
	Var (Intercept)	5.35 (1.97)**	2.66 (1.11)*
<i>Predictors of Intercept</i>	Response status	-2.15 (0.71)**	0.51 (0.50)
	Age	0.93 (0.19)***	0.48 (0.14)***
	COMB Tx	1.50 (1.08)	0.16 (0.55)
	SRT Tx	-0.05 (1.08)	-0.58 (0.49)
<i>Predictors of Slope</i>	CBT Tx	-0.57 (1.03)	0.02 (0.50)
	Response X Age	0.52 (0.27)	0.02 (0.22)
	Response status	0.38 (0.28)	0.11 (0.18)
	Age	-0.13 (0.05)**	-0.06 (0.02)***
	COMB Tx	-0.48 (0.44)	-0.07 (0.14)
	SRT Tx	-0.17 (0.39)	0.01 (0.13)
	CBT Tx	-0.30 (0.41)	0.06 (0.14)
	Response X Age	0.38 (0.28)*	0.01 (0.04)

Note. Var = Residual Variance; COMB tx = CAMS medication and therapy treatment condition; SRT tx = CAMS medication treatment condition; CBT tx = CAMS therapy treatment condition; *** p<.001; ** p<.01; * p<.05.

Figure 1.1

Response status as a predictor of the intercept and slope of average life satisfaction scores

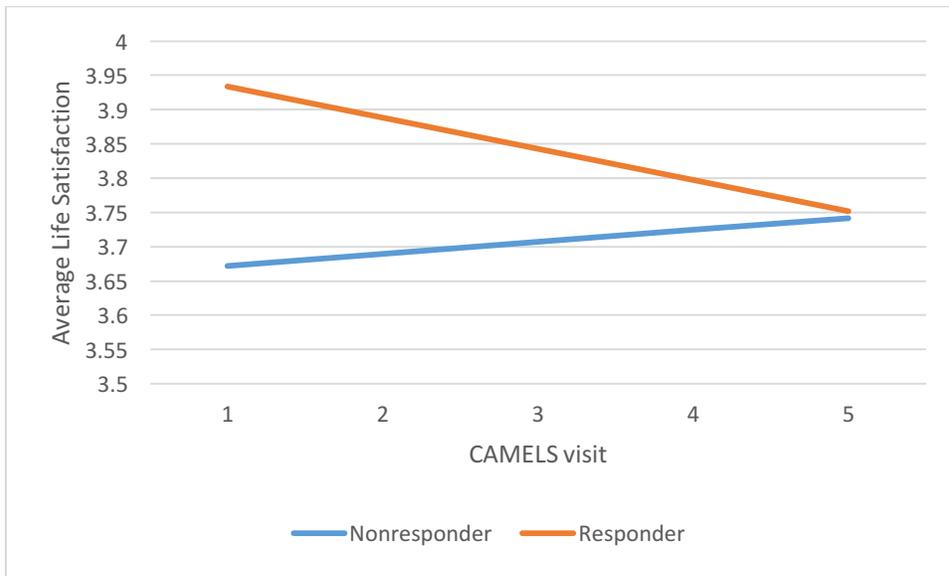
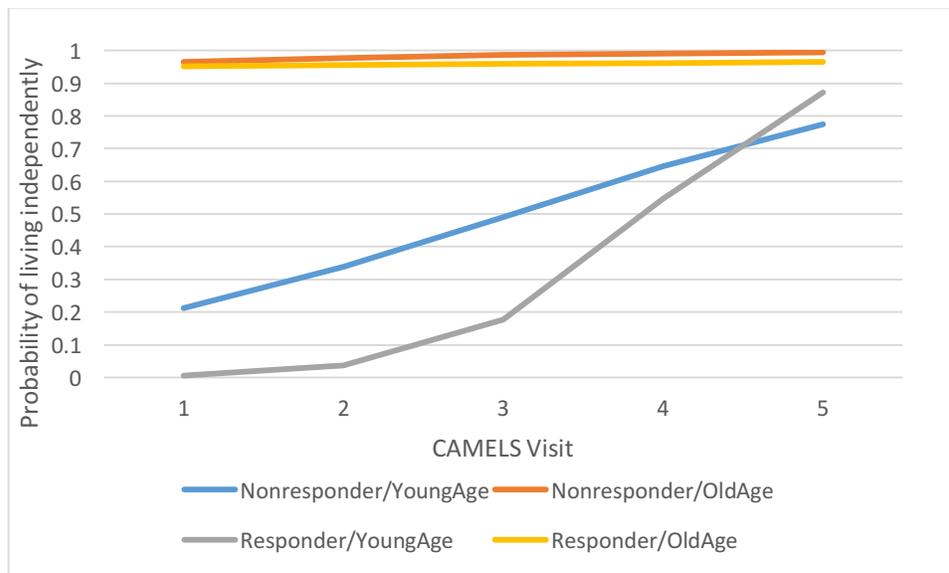


Figure 1.2

The interaction between age at first CAMELS assessment and response status on the probability of living independently from parents



Note. YoungAge = Participants 1 standard deviation below the mean age at CAMELS first assessment. OldAge = Participants 1 standard deviation above the mean at CAMELS first assessment.

CHAPTER 2

LITERATURE REVIEW

Fear and missing out: Youth anxiety and functional outcomes

Anxiety disorders are the most common psychological disorders to affect children and adolescents (Costello, Egger, & Angold, 2005) with epidemiological reports estimating the prevalence of impairing anxiety disorders at greater than 10% (Copeland, Angold, Shanahan, & Costello, 2014). Generalized Anxiety Disorder (GAD), Separation Anxiety Disorder (SAD), and Social Phobia (SoP) are common youth anxiety disorders, have high overlap in symptomatology (Kendall et al, 2010), and are often comorbid with each other and/or with depression (Cummings, Caporino, & Kendall, 2014). Coupled with high prevalence rates, youth anxiety disorders have been said to be associated with negative proximal and distal functional outcomes that, when left untreated, can extend into adulthood.

Numerous studies have demonstrated the efficacy of therapy (e.g., Kendall, Hudson, Gosch, Flannery-Schroeder, & Suveg, 2008) and medication (see, Reinblatt & Riddle, 2007 for a review) in treating youth anxiety disorders. The largest randomized clinical trial, the Child Anxiety Multimodal Study (CAMS), evaluated the efficacy of individual cognitive behavioral therapy (*Coping cat*; CBT), medication (sertraline; SRT), a combination of the two treatments, and a pill placebo among 488 youth ages 7 to 17 (Walkup et al., 2008). Response rates indicated favorable symptom reductions: 80.7% of participants in the combined treatments, 59.7% of those in CBT, 54.9% of those receiving SRT, and 23.7% of those receiving the placebo were considered treatment

responders at week 12. To date, the majority of treatment outcome research has focused on symptom reduction as the primary marker of treatment success. However, symptom reduction is not the entire picture: anxiety disorders are meaningfully associated with impairment in social, educational, occupational and/or family functioning and examinations of treatments would be wise to consider changes in functioning.

The current review provides a critical evaluation of the empirical research that has begun to explore (a) the impact of youth anxiety disorders on proximal and distal functional outcomes, including life satisfaction and domain-specific functional outcomes (i.e. academic, occupational, family, social, and legal functioning), and (b) the impact of having received an empirically-supported treatment for anxiety in youth on functioning immediately following treatment and at later follow-ups. To our knowledge, this is the first review to examine the differential impact of anxiety in youth on functioning across domains and throughout development, thus highlighting potential treatment goals and markers of treatment success beyond symptom reduction. When possible, the unique impact of anxiety disorders on functional outcomes, rather than psychopathology more generally, is discussed.

Life Satisfaction

Impact of Anxiety

Life satisfaction can be defined as subjective well-being and is considered separate from measures of disability and impairment (Mogotsi, 2000). Research suggests that adults with anxiety, SoP in particular, report decreased quality of life and life satisfaction (see Kessler, 2003 for a review). Longitudinal research suggests a reciprocal relationship between mental health problems, including anxiety disorders, and decreased

life satisfaction during early adulthood (i.e., from age 18 to 35; Fergusson et al., 2015); however, there is a dearth of research examining life satisfaction in anxious youth.

Two epidemiological, cross-sectional studies suggest that internalizing symptoms are associated with decreased life satisfaction in youth. Dooley and colleagues (2015) reported anxiety and depressive symptoms to be associated with decreased life satisfaction. Guhn and colleagues (2013) reported frequent victimization to be associated with concomitant anxiety symptoms and depression; conversely, increased life satisfaction was related to positive relationships with adults and with peers. Given that anxious youth report strained peer relations (Benjamin, Costello, & Warren, 1990), findings suggest a relationship between anxiety symptoms and decreased subjective well-being in childhood.

In addition to affecting global life satisfaction, anxious youth may experience decreased satisfaction in specific domains. For example, one study assessing academic functioning in youth with anxiety disorders reported that teachers rated non-anxious youth as happier in the classroom than peers with anxiety disorders (Mychailyszyn, Mendez, & Kendall, 2010). Of note, most studies reporting on the relationship between youth anxiety and global life-satisfaction have been cross-sectional in nature and relied on youth self-report. Additional studies using multi-method, multi-informant report in both clinical and community samples are needed. In particular, no studies have examined the relationship between anxiety *disorders* and subjective well-being in youth. Given theory from the field of positive psychology that suggests psychological well-being and mental illness are separate constructs, rather than opposite ends of a spectrum (e.g., Seligman & Csikszentmihalyi, 2000), additional research is needed to examine the

relationship between anxiety disorders in youth and their impact on positive, protective factors like relationship quality and life satisfaction.

How might the presence of anxiety early in life affect life satisfaction in adulthood? Anxious youth may be avoidant of and less likely to explore educational and career options, as well as romantic partnerships in early adulthood, resulting in few opportunities to find a satisfying match within these domains. Individuals with anxiety also report decreased self-efficacy in new situations (e.g., Hughes, Hedtke, & Kendall, 2008). As anxious youth enter emerging adulthood, adjusting to adult roles may prove difficult, resulting in decreased life satisfaction. One longitudinal study reported that the presence of an anxiety disorder in adolescence predicted decreased life satisfaction at age 30 when controlling for comorbid psychopathology (i.e., substance use and depressive disorders) in adolescence and adulthood, Odds Ratio (OR) = 0.10. This relationship was significantly mediated by anxiety in adulthood (Essau, Lewinsohn, Olaya, & Seeley, 2014). Though only one study, the data provide initial support for youth anxiety disorders as a unique risk factor for decreased life satisfaction in adulthood, even when controlling for comorbid psychopathology, but results need to be replicated in community and clinical samples. For a summary of findings here and throughout the paper, see Table 2.1.

Treatment

Only a few studies have included positive factors such as life satisfaction and quality of life as markers of treatment success. In a study examining the efficacy of SRT in treating youth anxiety, participants demonstrated significant improvements in quality of life on the basis of youth-, but not parent-report from pre- to post-treatment (ÇAkin et

al., 2014). Youth also demonstrated significant increases in global functioning and decreases in anxiety symptoms. Similarly, in a study examining the efficacy of CBT in treating anxiety in youth with comorbid anxiety and autism spectrum disorders, and youth with anxiety disorders alone, all youth who participated in CBT demonstrated increases in health-related quality of life; however, quality of life improved more in the anxiety disorder only group (van Steensel & Bögels, 2015). Conversely, in a study examining the efficacy of internet-based CBT for children with a specific phobia, anxiety severity ratings significantly decreased from pre- to post-intervention; however, quality of life ratings were not sensitive to treatment effects (Vigerland et al., 2013). In youth with a specific phobia, impairment may be circumscribed to a small number of situations; thus, interventions targeting specific phobias may not yield changes pervasive enough to affect global, quality of life ratings.

Only one study examined the effects of childhood intervention on quality of life \geq 5 years post-treatment. Of 66 youth who participated in CBT for anxiety between ages 7 and 14, treatment response in childhood did not predict quality of life measured by the Quality of Life Inventory, or overall disability measured by the Sheehan Disability Scale 7 to 19 years later (Benjamin, Harrison, Settapani, Brodman, & Kendall, 2013).

Few outcome studies have used quality of life questionnaires to assess improvement and sample sizes have been small. Research is needed to evaluate the impact of treatment on quality of life and to examine the sensitivity of life satisfaction measures to treatment effects at short- and long-term follow-up.

Academic Impairment

Impact of Anxiety

During childhood, elevated anxiety symptoms (beyond levels that may be seen as motivating) have been associated with concurrent academic impairment in community (Muris & Meesters, 2002) and clinical samples (Benjamin et al., 1990; Mychailyszyn et al., 2010). Youth experiencing excessive anxiety may have difficulty concentrating in school, attending instead to threat cues or worry thoughts (Wood, 2006). Moreover, as academic demands increase, anxious youth may choose to avoid rather than to engage fully in novel learning challenges. Thus, anxious youth may fall increasingly behind over time (Ialongo, Edelsohn, Werthamer-Larsson, Crockett, & Kellam, 1995).

In a sample of school-aged youth, teacher-report indicated more academic and social impairment for youth with anxiety disorders compared to their non-anxious peers (Benjamin et al., 1990). Similarly, in a study assessing school functioning in youth with SAD, GAD, SoP, or no anxiety disorder diagnosis, both parents and teachers rated anxious youth as exhibiting more academic impairments than their non-anxious peers (Mychailyszyn et al., 2010): parents of non-anxious youth rated their children as performing better in school than parents of anxious youth. Teachers reported that, on average, non-anxious youth worked harder, learned better, were happier in the classroom, and were more successful academically. With regard to specific diagnostic categories, teachers rated youth with more comorbid psychopathology as demonstrating increased academic impairment compared to their non-anxious peers. Youth with GAD alone or GAD and another *anxiety* disorder were rated as functioning better in school than youth with other anxiety diagnostic profiles, suggesting that not all anxiety disorders confer equal risk for academic impairment. Anxious youth may also have increased learning problems and greater difficulty concentrating in school, as evidenced by teacher-report of

school functioning in a sample of youth with and without SoP disorder (Bernstein, Bernat, Davis, & Layne, 2008).

Longitudinal studies add to the database indicating the short- and long-term deleterious effects of youth anxiety on academic functioning. Data suggest that youth who self-report elevated anxiety symptoms in 1st grade are 10 times more likely to be in bottom third on a standardized academic achievement test in the 5th grade when controlling for teacher-reported concentration problems, aggression, and social participation (Ialongo et al., 1995); teacher-identified anxious 1st graders are three times more likely to be in bottom third on a standardized reading achievement test and twice as likely to be in the bottom third on a math achievement test in the 8th grade compared to non-anxious peers (Grover, Ginsburg, & Ialongo, 2007). Moreover, trajectory analyses reveal that teacher-reported elevated anxiety in childhood predicts stable, low academic performance from elementary to high school, rather than stable high levels of achievement or declining academic performance (Duchesne, Larose, Guay, Vitaro, & Tremblay, 2005). Taken together, findings indicate that both self- and teacher-reported elevated anxiety *symptoms* in early childhood predict lower academic performance throughout schooling. Further research is needed to examine the impact of anxiety *disorders* (and specific anxiety disorders) on academic performance across time.

Childhood anxiety has been linked to academic underachievement, measured by highest grade completed and school drop-out (e.g., Woodward & Fergusson, 2001); however, findings are not consistent (e.g., Essau et al., 2014). In a 30-month prospective study of 3,021 German adolescents and young adults aged 14 to 24, participants with anxiety disorders, but not substance use, affective, or eating disorders, were more likely

to drop-out of school (OR = 2.4), and to have lower educational status, measured as highest grade completed (OR = 1.5; Wittchen, Nelson, & Lachner, 1998). Similarly, in a 21-year longitudinal study of 1,265 New Zealand children, non-anxious youth were 2.5 times more likely to attend university than youth diagnosed with 3 or more anxiety disorders during adolescence. No significant differences were reported in academic achievement between youth diagnosed with one or two anxiety disorders in adolescence and non-anxiety disordered youth (Woodward & Fergusson, 2001). Findings from a relatively smaller, longitudinal study of 816 participants from the Oregon Adolescent Depression Project (OADP) did not support differences in academic achievement between adults with or without a history of adolescent anxiety disorders (Essau et al., 2014). Of note, number of anxiety disorders, which may be indicative of anxiety severity, was not examined as a differential predictor in this study. Perhaps anxiety severity, in addition to the presence or absence of disorder, is important to consider as a predictor of academic achievement.

Findings from studies using adult retrospective reporting (Van Ameringen, Mancini, & Farvolden, 2003) and prospective, longitudinal designs (Last, Hansen, & Franco, 1997; Lewinsohn, Rohde, & Seeley, 1995) suggest that a history of anxiety in childhood, in conjunction with comorbid conditions, is significantly linked to short- and long-term academic underachievement. In a 13.8 month prospective study, youth with anxiety disorders alone reported similar academic problems (i.e., school absences, satisfaction with grades, school expulsion, and repeating a grade) to adolescents without mental health disorders; however, comorbidity significantly increased the likelihood of academic difficulties (Lewinsohn et al., 1995). Similarly, in a study of youth first

assessed between ages 5 and 17 and followed-up between ages 18 and 26, there were no significant differences in academic achievement between participants who were psychologically healthy and those with an anxiety disorder diagnosis in childhood (Last, et al., 1997). However, participants with a childhood history of comorbid anxiety *and* depressive disorders were less likely to be working or to be in school. In a study of adults with anxiety and comorbid disorders, 49% retrospectively reported leaving school early, and 24% cited anxiety as the reason for their early departure (Van Ameringen et al., 2003). In particular, adults with SoP, more comorbid diagnoses, and/or a history of alcohol or substance abuse were more likely to leave school early. Anxiety disorders are commonly comorbid with anxiety and non-anxiety disorders (Kendall et al., 2010): as youth with anxiety transition into adulthood, comorbid symptomatology may be particularly implicated in academic underachievement.

Treatment

Studies of the efficacy of treating youth anxiety in general, and school-related anxiety in particular, consistently indicate that anxiety reduction improves school functioning and academic achievement. In CAMS, academic functioning (i.e., ability to complete assignments and homework, concentrate on work, give oral reports, take tests, and get good grades) was measured using the Child Anxiety Impact Scale (CAIS). Prior to treatment, anxiety severity was positively associated with more parent-reported academic impairment (Nail et al., 2014). Youth who responded to treatment, compared to nonresponders, were significantly more likely to demonstrate parent-reported academic improvement. Decreased anxiety symptoms over the course of treatment have also been associated with improved school functioning as measured by the Child Behavior

Checklist (CBCL) school scale and the CAIS school scale in youth receiving individual CBT (ICBT) or family CBT (FCBT; Wood, 2006). Additionally, there is some evidence that treatment type differentially predicts academic improvement. In a study comparing ICBT, FCBT, or family-based education, support and attention (FESA), responder status was not examined as a predictor of school functioning improvement; however, treatment condition was (Suveg et al., 2009): mother-report indicated greater improvement in academic functioning for youth who received CBT or FCBT, compared to FESA, suggesting comparative positive outcomes of CBT treatments that extend beyond symptom reduction. In contrast, fathers reported more improvement in academic functioning for younger children compared to older children across treatment conditions.

School-based interventions have examined the impact of anxiety reduction on academic achievement. For high school students who self-reported elevated test anxiety, and participated in a group-format intervention, decreased anxiety symptoms were predictive of increased grade-point averages (GPA; Weems et al., 2009). Youth who received the intervention demonstrated significantly greater increases in GPA compared to youth who did not. Similarly, in a study examining the effect of a CBT stress management intervention (SMI), or a non-active intervention on academic performance, youth in the treatment group performed better on standardized, academic achievement tests (Keogh, Bond, & Flaxman, 2006). This superior performance was mediated by changes in school motivation (e.g., “I like to make long-term plans for my studies and achievements”), suggesting that decreased motivation is implicated in academic underachievement for anxious youth.

In sum, studies suggest that reducing anxiety yields short-term improvement in overall school functioning (e.g., Nail et al., 2014), in GPA (Weems et al., 2009), and on standardized achievement tests (Keogh et al., 2006). However, no studies have examined the long-term effects of treating anxiety in childhood on academic achievement and educational status (e.g., highest grade completed).

Occupational Impairment

Emerging adulthood, defined as the developmental period from late teens to early 20s, is associated with increased independence from caregivers and identity development (Arnett, 2000). During childhood and early adolescence, teachers, parents and other adults provide structure to youth life. In adulthood, work and family role obligations provide a similar structure. Emerging adulthood is a time when the scaffolding of childhood dissipates before the increased role requirements and obligations of adulthood manifest. As such, emerging adults are tasked with exploring career options and interpersonal relationships as they make important decisions with long-lasting consequences (e.g., marriage, child-birth, educational status; Arnett, 2007). For most emerging adults, this period is associated with increased self-esteem and life-satisfaction (Galambos, Barker, & Krahn, 2006) and decreased anxiety symptoms and somatic complaints (Gestsdottir et al., 2015). As anxious youth enter adulthood, however, fear and avoidance of new situations and/or relationships may interfere with or delay the achievement of important developmental tasks (e.g., entering the workforce; Last et al., 1997).

The reported findings regarding the impact of anxiety disorders in youth on later occupational functioning are mixed; however, research suggests that related constructs like temperamental factors (e.g., shyness), internalizing symptomatology, and psychopathology more generally are inversely associated with later occupational achievement (e.g., Caspi, Elder, & Bem, 1988) and household income (e.g., Seeley, Kosty, Farmer, & Lewinsohn, 2011). In a study following participants from 1928 to 1958, mother-reported child shyness predicted delayed entry into the workforce, and decreased occupational achievement for men (Caspi et al., 1988). Women whose mothers reported them to be shy in childhood were more likely to end employment following marriage or childbirth, or to have no work history outside of the home compared to non-shy peers. Shy young adults may be more undecided about career aspirations and less likely to seek out additional career information than non-shy peers (Phillips & Bruch, 1988), which may yield delayed entry into the workforce and/or decreased satisfaction with employment. In a 15 year prospective study, youth with one or more internalizing disorders between 14 and 19 were at increased risk for unemployment and lower household income at age 30 (Seeley et al., 2011). Moreover, Wittchen and colleagues (1998) reported adolescent and young adult participants with *any* psychological disorder, including anxiety, as more likely to have a lower household income than peers without any psychological disorders, indicating that anxiety disorders may not confer unique risk for lower household income; rather, the presence of any psychological disorder impacts occupational functioning.

Less is known about the impact of childhood anxiety disorders *specifically* on employment in adulthood, and the available findings are inconsistent. In a prospective

study following participants from adolescence to adulthood, adolescent anxiety disorders predicted poor self-reported adjustment at work at age 30, but not unemployment or annual household income, when controlling for comorbid psychopathology in childhood and adulthood (Essau et al., 2014). Of note, differing diagnostic profiles were not examined as predictors of occupational functioning, and some research supports anxiety *in combination with* depression as a predictor of later employment status and income: in a prospective study assessing participants between ages 5 and 17, and then again between 18 and 26, findings did not support a significant difference in employment status or income for participants with childhood anxiety disorders alone and healthy controls (Last et al., 1997); however, young adults with a childhood history of comorbid anxiety *and* depression reported lower income and were less likely to be employed or in school than young adults with no childhood psychiatric history. Thus, the existing literature lends initial support to the idea that youth anxiety disorders are associated with continued impairment in adulthood, including difficulty adjusting to work (e.g., Essau et al., 2014), and youth with anxiety *and* depression may be at increased risk for unemployment and lower household income in adulthood (e.g., Last et al., 1997); however, findings need to be replicated.

Treatment

Chronic anxiety in adulthood is linked to occupational impairment, and episodic anxiety (i.e., anxiety disorders that remit over time) is also associated with occupational impairment that persists even as anxiety symptoms remit (Iancu et al., 2014). Treatment studies examining the efficacy of CBT for adult anxiety suggest that treatment responders evidence improvement in occupational functioning, in addition to anxiety symptom

reduction. In a study examining associations between anxiety severity and work impairment in adults with anxiety disorders, adults with greater anxiety severity demonstrated lower work performance and attendance (Erickson et al., 2009). After receiving treatment, adults who demonstrated symptom improvement also demonstrated improvement in overall work performance and interpersonal functioning while at work, but not work attendance. Similarly, in a study examining CBT treatment outcomes for adults with GAD, participants showed a significant decrease in impairment related to work performance, adjustment to work routines, and interpersonal relationships with colleagues from pre- to post-treatment and at follow-up (Linden, Zubrägel, & Bär, 2011).

Results are promising in demonstrating the positive effects of treatment response on short-term occupational functioning in anxious adults; however, no studies have examined the effect of youth anxiety treatment on later occupational outcomes. Longitudinal studies suggest that, in the absence of treatment, patterns of anxious and avoidant behavior in childhood extend into adulthood, particularly as young adults have more opportunity to select environments that reinforce and sustain anxiety-maintaining behaviors (Caspi et al., 1988). The effect of successful, early treatment on occupational trajectories in adulthood is an important yet unanswered question.

Family Functioning

Child anxiety is associated with concurrent impairment in family life with some research indicating a bidirectional relationship between family factors (e.g., parenting behaviors, family dysfunction, and parental psychopathology) and youth anxiety (e.g., Ginsburg, Siqueland, Masia-Warner, & Hedtke, 2004; Micco et al., 2009). In particular, problematic parent-child relationships (e.g., poor communication; parental behavioral

control) and family dysfunction are associated with youth anxiety symptoms and less favorable treatment outcomes (see, Wei & Kendall, 2014 for a review).

Studies indicate that families of youth with *any* psychological disorder report concurrent family dysfunction: 89% of youth with mood, behavior and/or anxiety disorders reported family dysfunction (Fristad & Clayton, 1991); however, disorder type was not associated with differences in family dysfunction. In a study of youth with anxiety, mood, comorbid anxiety and mood disorders, or no disorder, children with *any* psychological disorder perceived their family as more distressed than the non-disordered group (Stark, Humphrey, Crook, & Lewis, 1990). Additionally, families with a depressed and anxious child reported more family distress than families with an anxious child alone, suggesting that comorbid conditions contribute to increased family distress. Severity may also play a role: families of anxiety-disordered youth reported more negative family interactions than parents of non-anxious youth in an inpatient sample, suggesting a unique contribution of anxiety to family conflict and distress in severe, inpatient cases (Kashani et al., 1990).

In addition to family dysfunction, parenting practices like behavioral control, overprotection, and accommodation are associated with youth anxiety disorders. These kinds of parenting behaviors may maintain anxiety in youth by preventing the development of their coping and self-efficacy in difficult situations (Hughes et al., 2008). Cross-sectional studies demonstrate a relationship between increased parental behavioral control and decreased family functioning as reported by parents of anxious compared to non-anxious youth (Hughes et al., 2008). Additionally, anxious youth report that parents grant them less independence (Messer & Beidel, 1994). Parental behavioral control may

also be implicated in the etiology of youth anxiety. In a community sample of adolescents followed for 10 years, parental social phobia and parenting behaviors (e.g., parental overprotection, rejection, and less emotional support) were associated with child development of social phobia (Knappe et al., 2009).

Family accommodation, defined as ways in which parents modify their own behaviors to reduce distress for their child, is potent within the anxiety disorders. Cross-sectional studies report that parental accommodation of anxiety symptoms is prevalent across all anxiety disorders: in a study of youth with anxiety disorders and their families, 97.3% of parents endorsed some level of family accommodation and 76% reported both participation in anxiety symptoms and modification of the family routines to accommodate anxiety (Lebowitz et al., 2013). Moreover, parental accommodation is associated with increased anxiety severity and family distress (Thompson-Hollands, Kerns, Pincus, & Comer, 2014). In a study comparing parental accommodation in families of youth with an anxiety disorder, obsessive compulsive disorder (OCD), or no anxiety disorder, parents of children with anxiety or OCD reported more accommodation, and accommodation was positively associated with increased severity in the anxiety disorder and OCD groups (Lebowitz, Scharfstein, & Jones, 2014). Cross-sectional studies indicate that parents accommodate anxiety symptoms to reduce short-term distress (e.g., having a child with separation anxiety stay home from school to avoid a tantrum); however, avoidance through parental accommodation maintains anxiety over time. Longitudinal, prospective designs are needed to examine the interplay between accommodation and the maintenance of anxiety symptoms over time.

In addition to concurrent impairment in family functioning, childhood anxiety is associated with continued impairment in adulthood (i.e., poorer family relationships and more problems with the family unit when controlling for comorbid psychopathology; Essau et al., 2014) and difficulty transitioning to adult roles. Given increased parental control and protection throughout development, youth with anxiety disorders may have a diminished sense of self-efficacy in novel situations (Hughes et al., 2008). Thus the transition to independent living may be particularly difficult for adults with a history of anxiety in childhood. Indeed, Last and colleagues (1997) reported that participants diagnosed with an anxiety disorder in childhood were less likely to live independently between ages 18 and 26 than youth with no history of mental health problems.

Is youth anxiety and/or related temperamental factors associated with off-time achievement of adult developmental tasks (i.e., marriage and parenthood)? In a study of participants followed from 1928 to 1958, men with a history of shyness in childhood were less likely to marry and more likely to have children later than non-shy peers. In contrast, women with a history of shyness in childhood were more likely to follow patterns of marriage and child-birth typically reported by peers (Caspi et al., 1988). With regards to anxiety disorders specifically, number of anxiety disorder diagnoses in adolescence did not significantly predict early parenthood when controlling for confounding factors (i.e., maternal educational achievement, lower socioeconomic status) in a prospective study examining the effect of youth anxiety disorders on later functioning (Woodward & Fergusson, 2001). Of note, gender and type of anxiety disorder were not entered as differential predictors, and initial research suggests that social anxiety disorder in particular may be implicated in early pregnancy for women

(Kessler, 2003). Data from the National Comorbidity Study indicate that girls with social anxiety are less likely than peers to be sexually active (Kessler, 2003); however, data suggest that socially anxious girls are also less likely to use contraception than peers when sexually active, resulting in higher rates of teenage pregnancy. Young adults with social anxiety may have increased difficulty asserting themselves in romantic relationships and communicating about contraception, resulting in higher rates of teenage pregnancy. In sum, findings indicate a relationship between youth anxiety disorders and early or delayed transitions to adult roles; however, gender differences and type of anxiety disorder may differentially predict timing and adjustment to adult roles like pregnancy, parenthood, and marriage, and warrant further research.

Treatment

Studies examining the efficacy of CBT for anxiety in reducing family dysfunction show promise. A favorable treatment response for youth in CAMS predicted parent ratings of decreased family dysfunction, suggesting that meaningful improvement in anxiety is associated with improvement in family functioning (Keeton et al., 2013). Parent-reported family burden and child-reported family dysfunction improved from pre- to post-treatment regardless of responder status. Similarly, in study comparing individual CBT to CBT with a parent component (P/CBT), child-reported family conflict reduced from pre- to post-treatment in youth with high pretreatment anxiety scores across treatment conditions (Silverman, Kurtines, Jaccard, & Pina, 2009). In addition to family conflict and dysfunction, studies demonstrate the efficacy of CBT in reducing negative parenting behaviors. However, the directionality of changes in parenting behavior and anxiety symptom reduction remains unclear. Silverman and colleagues (2009) found

reductions in youth-reported anxiety from pre- to post-treatment to predict subsequent reductions in negative parenting behaviors from post-treatment to follow-up. These results suggest that as youth anxiety improves, negative parenting behaviors decrease. Conversely, Settapani and Kendall (2013) found reductions in family affective involvement (i.e., how and in what way family members are involved in each other's activities, sometimes at the expense of individual independence) from pre- to post- to predict decreases in child anxiety symptoms at follow-up. These results suggest that changes in parenting behavior (i.e., family affective involvement) predict subsequent reduction in anxiety symptoms. Thus, although the directionality of change remains unclear, changes in parenting behaviors are associated with decreased anxiety symptomatology in anxious youth receiving treatment. More family dysfunction, higher levels of family behavioral control, and higher parenting stress have also been shown to predict worse CBT outcomes for anxious youth (see, Rey, Marin, & Silverman, 2011 for a review).

Findings suggest that successful treatment of youth anxiety disorders is associated with increased family functioning and decreased negative parenting behaviors that may serve to maintain anxiety over time at posttreatment and short-term follow-up. That said, no research has examined the long-term effects of early anxiety treatment on family functioning and adjustment to emerging adult roles. Given the long-term deleterious effects of youth anxiety on relationship quality, family problems, and off-time role transitions, including teenage pregnancy for women with social phobia, research assessing the effect of early treatment on functioning in late adolescence and early adulthood merits further attention.

Social Functioning

Elevated anxiety in childhood and adolescence has been said to be associated with concurrent impairment in social functioning that extends into adulthood (e.g., Seeley et al., 2011). Cross-sectional studies consistently demonstrate such a finding, with youth with elevated anxiety symptoms (Muris & Meesters, 2002), and anxiety disorders (Benjamin et al., 1990) having more teacher-reported problematic peer relationships than non-anxious peers.

In addition to difficulties with peers, youth with anxiety disorders show deficits in social competency based on parent-, teacher-, and self-report: in a study comparing referred children who met criteria for one or more anxiety disorders to clinic referred non-anxious children and non-referred children, anxious youth reported themselves to be less socially competent (Strauss, Lease, Kazdin, Dulcan, & Last, 1989). Teachers rated anxious youth to be more shy and timid, and parents of anxious youth reported that their children were more socially withdrawn and had greater difficulty demonstrating appropriate, assertive behaviors, compared to non-anxious clinic-referred youth. Similarly, in a study comparing youth with and without anxiety disorders, anxious youth rated themselves as less socially competent and reported more negative expectations in anticipation of joining a social interaction with unfamiliar peers (Chansky & Kendall, 1997). Parents and teachers also rated anxious youth as less socially adept. Anxious youth may show social deficits in part because they “expect the worst” in social interactions, which interferes with effective engagement with peers. Indeed, multiple-informant reports suggest that anxious youth are less socially competent and have more peer problems than non-anxious peers (Chansky & Kendall, 1997). Anxious youth may

also avoid social interactions, thus limiting opportunities to learn and practice social skills with peers.

Of note, some research indicates that social anxiety specifically, rather than anxiety disorders in general, is associated with youth social impairment. In a study of children with GAD, SoP, or no anxiety disorder diagnosis, children with GAD reported fewer friends than healthy controls, but were no different on parent-reported measures of social competence or participation in activities than non-anxious children (Scharfstein, Alfano, Beidel, & Wong, 2011). In contrast, youth with SoP were rated as less socially competent by parents, had fewer friends, and reported more difficulty making new friends compared to non-anxious controls. Similarly, in a study of treatment-seeking youth who met criteria for an anxiety disorder, socially phobic youth reported greater difficulty making friends and were more likely to prefer being alone than with others compared to anxious youth who did not meet diagnostic criteria for SoP (Cohen & Kendall, 2015). At the symptom level, youth who self-reported more social anxiety symptoms also self-reported increased peer victimization. Bernstein and colleagues (2008) reported that teachers rated anxious youth with more severe social anxiety as having poorer social skills and decreased leadership skills.

Youth with social anxiety may have particular difficulty making and maintaining friendships because peers view them as less likeable. In a study by Verduin and Kendall (2008), youth with GAD, SAD, SoP, or no anxiety disorder diagnosis generated a 4-minute speech sample and were rated by peers for “likeability”. Overall, peers rated youth with anxiety disorders as less likeable than non-anxious youth; however, when examined at the disorder level, SoP, but not GAD or SAD, was associated with lower

peer likeability ratings. Other research has found that youth with elevated social anxiety symptoms are more likely to be “neglected” by peers (i.e., rated by peers as neither liked nor disliked) compared to non-socially anxious peers (La Greca & Stone, 1993).

Community-based studies support a relationship between social anxiety symptoms and social impairment throughout development. In elementary (La Greca & Stone, 1993) and high school (La Greca & Lopez, 1998), youth with elevated social anxiety symptoms report less social acceptance. High school girls with elevated social anxiety symptoms also report fewer friendships and less support from the few close friends they have (La Greca & Lopez, 1998). Youth with elevated social anxiety symptoms may demonstrate increased social impairment in part due to difficulty understanding and responding appropriately in socially nuanced situations. Banerjee and Henderson (2001) reported that youth with elevated social anxiety had greater difficulty understanding the link between emotions, intentions, and beliefs in social situations (e.g., identifying a faux pas in a mock social situation and explaining the negative social and emotional consequences of the blunder; Banerjee & Henderson, 2001). Socially anxious youth were also rated as less socially skilled by teachers.

Longitudinal studies support a reciprocal relationship between anxiety symptoms/disorders and social difficulties, including peer victimization. Data suggest that elevated anxiety symptoms in the first grade predict decreased peer acceptance in the eighth grade (Grover et al., 2007). Peer victimization is also associated with increased anxiety and depressive symptoms in adolescence, and frequent peer victimization predicts increased internalizing symptoms one year later (Stapinski, Araya, Heron, Montgomery, & Stallard, 2015). Moreover, in a study examining the relationship

between peer victimization and anxiety, youth who experienced frequent overt and relational peer victimization at age 13 were three times more likely to develop an anxiety disorder by age 18 than youth who did not experience peer victimization, suggesting that problematic peer relationships may contribute to the development of anxiety disorders (Stapinski et al., 2014).

Social anxiety symptoms specifically are associated with increased relational victimization in boys one year later, and relational victimization has been shown to predict increased social anxiety symptoms in boys and girls (Storch, Masia-Warner, Crisp, & Klein, 2005). Social skills deficits may partially explain problematic peer relationships for socially anxious youth. Youth rated by observers as less skilled during a speech task, and rated by teachers to have more social problems at school were more likely to report elevated social anxiety symptoms extending from childhood into early adulthood (Miers, Blöte, de Rooij, Bokhorst, & Westenberg, 2013). In sum, anxiety in childhood and adolescence is associated with short- and long-term impairment in social functioning, and research suggests that social deficits are pronounced for youth with social anxiety.

Treatment

Anxiety-specific interventions improve social functioning in addition to anxiety symptoms. In a study of children aged 7 to 14 who met criteria for an anxiety disorder, youth who received individual CBT or FCBT demonstrated gains in mother-reported social competency from pre- to post-treatment, and fathers reported greater increases in social competency for younger children across treatment conditions (Suveg et al., 2009). Decreased anxiety was also associated with improved social adjustment over a course of

CBT (Wood, 2006), and increased parent-report of social competence (Settipani & Kendall, 2013).

Social Effectiveness Therapy for Children (SET-C) is an intervention for improving social anxiety and social skills in youth. In a study of children aged 8 to 12, youth who participated in SET-C were more likely to no longer meet criteria for SoP post-treatment compared to youth who participated in a nonspecific intervention (Beidel, Turner, & Morris, 2000). Social skills were measured by asking youth to participate in a series of role plays, including starting a conversation, giving a compliment, and asserting oneself appropriately with a same-aged peer. Social competency was rated by impartial observers, and youth in the active treatment condition demonstrated significantly better social skills pre to post-intervention. In a 3, 4, and 5-year follow-up study, Beidel and colleagues (2006) found treatment gains to be largely maintained. Youth who responded to treatment and youth with no history of social anxiety disorder performed similarly on social skill assessments.

Youth with anxiety disorders often present with marked impairment in social functioning. Treatment studies show promising results, suggesting that as anxiety decreases, social competency and skill increases (e.g., Settipani & Kendall, 2013). Treatment response is associated with enhanced social skills that are maintained up to 5 years post-intervention (Beidel et al., 2006). However, no studies have examined how early anxiety treatment affects social functioning at >5 year follow-up, or during the transition into adulthood.

Delinquency and criminal behavior

Although in many ways dissimilar, there is some overlap between anxiety and externalizing disorders in childhood (Bubier & Drabick, 2009), and some research suggests that elevated anxiety in childhood protects against aggressive and delinquent behaviors. In a study of boys aged 10 to 12 followed until ages 13 to 15, behavioral inhibition (associated with later development of anxiety disorders) protected boys with and without disruptive behavior disorders from engaging in delinquent behaviors (e.g., stealing and vandalism) over the follow-up period (Kerr, 1997). Behaviorally inhibited boys may be less likely to associate with deviant peer groups, contributing to decreased rates of delinquent behaviors. Similarly, in a study of youth (mean age 14.8) who received public mental health services, a significantly lower percentage of youth who met criteria for an anxiety or depressive disorder were arrested (4%) compared to youth overall (20%) during a 38-month follow-up period (Rosenblatt, Rosenblatt, & Biggs, 2000).

In contrast, some research suggests that differing anxiety profiles *increase* risk for, rather than protect against, delinquent behaviors during later adolescence. In a community-based study of adolescents followed from seventh/eighth grade to eleventh/twelfth grade, cluster analysis was conducted to identify youth who were socially anxious and impulsive, socially anxious and inhibited, impulsive, and youth with no reported concerns. Boys, but not girls, in the anxious-impulsive group were more likely to report alcohol intoxication and delinquent behaviors (i.e., destruction of property; stealing money from parents) than their peers during the follow-up period. These results suggest that childhood anxiety combined with impulsivity increases risk, rather than protects against, alcohol use and delinquent behaviors in adolescence for boys

(Tillfors, Van Zalk, & Kerr , 2013). Thus, anxiety symptoms in general may protect against antisocial behaviors in early adolescence; however, as boys enter mid- to late-adolescence, anxiety in combination with impulsivity may confer risk for substance use and delinquency.

Additionally, as youth enter adulthood, anxiety alone may not significantly impact antisocial behavior; however, anxiety *in combination with* substance use may increase risk: in a study of youth followed for 12 years from adolescence into adulthood (16-25), substance abuse disorders increased the likelihood of criminal behavior; however, anxiety disorders neither protected against nor increased the likelihood of committing an offense (Pullmann, 2010). Comorbid substance use and youth anxiety as a risk factor was not reported on. In contrast, a study by Copeland and colleagues (2007) examined comorbid profiles and found differing results. Youth between 9 and 13 were followed annually until age 16, and arrest records were ascertained between ages 16 and 21. Participants were categorized into four groups: no offense charge between 16 and 21, small offense charges (disorderly conduct, trespassing), moderate offense charges (larceny; simple assault; drug-related offenses), or severe offense charges (sexual assault, assault with a deadly weapon). The presence of comorbid substance use problems *and* one or more youth anxiety disorder predicted increased risk of committing minor (OR = 7.5) and severe offenses (OR = 11.1). Similarly, women who met diagnostic criteria for an anxiety disorder between 9 and 16 were three times more likely to fall into the moderate offense group (OR = 3.1); however, this relationship did not hold for men. For men, but not women, comorbid anxiety and depression decreased risk of committing moderate offenses (OR = 0.1). These results suggest that interfering anxiety in youth increases risk

of committing moderate offenses for women, but youth anxiety when combined with depression decreases risk for men. Moreover, anxiety disorders in youth, when coupled with substance use, increase the likelihood of committing minor and severe offenses during early adulthood. Youth anxiety disorders are associated with the development of substance use problems in adulthood (e.g., Kendall, Safford, Flannery-Schroeder, & Webb, 2004), and anxiety when coupled with substance use may place adults at increased risk of committing antisocial acts (McMurran, 2011).

Studies examining youth anxiety as predictive of criminal behavior in offender populations (i.e., people with at least one arrest record) largely indicate that anxiety disorders alone do not significantly impact later offending. In a study of youth arrested between ages 12 and 24, latent class analysis was used to identify arrest trajectories (i.e., high or low frequency of arrest) across the 12-year period. Anxiety and depressive disorders were not significantly associated with youth falling into any of the groups (Constantine, Andel, Robst, & Givens, 2013). Another study of youth (mean age 16) charged with a violent offense, found that substance abuse and disruptive behavior disorders predicted recidivism rates over a 7-year follow-up period; however, youth mood and anxiety disorders neither protected against nor increased the likelihood of recidivism (Guebert & Olver, 2014).

Studies examining the relationship between youth anxiety and antisocial behavior in childhood, extending into adulthood, indicate that anxiety in childhood protects against delinquent behavior, for men in particular (Kerr, 1997; Rosenblatt et al., 2000). However, when combined with trait impulsivity (Tillfors et al., 2013) and substance abuse (Copeland et al., 2007), elevated levels of anxiety in childhood and adolescence

may increase antisocial behavior in adolescence and adulthood. Research in offender populations largely supports that anxiety disorders neither confer risk for nor protect against recidivism; however, more research is needed examining the impact of comorbid anxiety and substance use disorders on chronic offending (Constantine et al., 2013; Guebert & Olver, 2014).

Treatment

To our knowledge, no studies have examined the effect of anxiety treatment on delinquency and criminal behavior at short- or long-term follow-up. One study examined the effect an anxiety-based CBT intervention on oppositional behavior and found that rates of oppositional defiant disorder (ODD) reduced from 9.2% at pre-treatment to 1.8% at follow-up in a study of youth with a primary anxiety disorder (Kendall, Brady, & Verduin, 2001). However, the impact of anxiety treatment on delinquency and criminal behavior following acute treatment and at later follow-ups remains unknown.

Research supports that anxious youth who respond to treatment in childhood are less likely to develop substance use problems in adulthood (Kendall et al., 2004), and treatment non-responders are more likely to have substance use problems than the general population 7 to 19 years later (Benjamin et al., 2013). Given that a history of youth anxiety when concomitant with substance use may increase the likelihood of criminal behavior (e.g., Copeland et al., 2007), the effect of early intervention for anxiety on long-term legal outcomes warrants further research.

What Next? Impact of Youth Intervention on Adult Functioning

CBT and SRT interventions are efficacious in the treatment of youth anxiety disorders and can reduce impairment in global and domain-specific (e.g., academic,

family, and social) functioning immediately following treatment. However, the impact of efficacious treatment in youth on functional outcomes as youth transition into adulthood remains largely unknown. To date there is only one study (Ginsburg et al., 2014) evaluating long-term global functional outcomes for youth who received medication for anxiety in childhood, and no studies have examined domain-specific functional outcomes for youth initially treated for anxiety with medication. In contrast to medication, six studies have assessed the long-term (> 5-year post-treatment) durability of CBT (Barrett, Duffy, Dadds, & Rapee, 2001; Beidel et al., 2006; Benjamin et al., 2013; Garcia-Lopez et al., 2006; Kendall et al., 2004) or CBT and SRT for youth initially treated for anxiety (Ginsburg et al., 2014). Of these studies, three reported on functional outcomes (Benjamin et al., 2013; Kendall et al., 2004; Ginsburg et al., 2014), but findings differ by sample size and measurement tool. Research is needed to clarify if and how early, effective treatment impacts life satisfaction and functioning as youth develop.

Of note, the relationship between anxiety and comorbid psychopathology on functioning merits consideration. Indeed, some findings indicate that the presence of an anxiety disorder alone in youth is not associated with increased functional impairments—it is anxiety and comorbid psychopathology that is associated with increased risk for unemployment and lower household income in adulthood (Last et al., 1997), academic underachievement (Lewinsohn et al., 1995), and increased criminal behavior (when comorbid with substance use; Copeland et al., 2007). Research is needed to examine the distinct or overlapping impact of anxiety in youth on domain-specific functioning throughout development, beyond the impact of comorbid concerns and psychopathology generally.

Responding to anxiety treatment in youth – in addition to reducing anxiety symptoms at short- and long-term follow-ups – may protect against the development of comorbid concerns in adulthood: Kendall and colleagues (2004) found that youth treated for GAD, SoP, and/or SAD who responded to treatment were less likely to use alcohol or marijuana and to suffer related interpersonal consequences a mean of 7.4 years later. Given that (a) treating anxiety in youth may buffer against the development of comorbid concerns, and (b) comorbidity is associated with increased functional impairments (Last et al., 1997), examining the impact of early treatment for anxiety on functional outcomes at later follow-ups clearly merits research attention.

Youth anxiety is associated with impairment in numerous domains, and longitudinal studies suggest that youth anxiety predicts continued global and domain-specific functional impairment in adulthood. Notably, prior studies suggest that CBT and SRT interventions for youth anxiety effectively reduce functional impairment post-treatment and at short-term follow-up; however, the impact of effective treatment on quality of life and functioning over time remains unclear. This review calls for research that goes beyond symptom reduction and examines the degree to which efficacious treatment impacts global (i.e., life satisfaction) and domain specific (i.e., social, familial, educational/occupational, and legal) functional outcomes for anxious youth as they transition into adulthood.

Table 2.1

The impact of anxiety, the impact of treatment, and future research directions for each of several functional outcomes

Functional Outcome	Impact of Anxiety	Impact of Treatment	Future Directions
Life Satisfaction	<ul style="list-style-type: none"> • Cross-sectional studies indicate that internalizing symptoms are associated with decreased life satisfaction (e.g., Dooley et al., 2015). Longitudinal studies, and studies examining anxiety disorders, are lacking. • One study reported anxiety disorders in adolescence to be a unique predictor of decreased life satisfaction at age 30 (Essau et al., 2014). Additional research is needed to replicate findings. 	<ul style="list-style-type: none"> • Few studies have examined the impact of anxiety treatment on quality of life in youth. • Initial findings are promising but differ by informant report (çAkin Memik et al., 2014) and anxiety disorder type (e.g., van Steensel & Bögels, 2015; Vigerland et al., 2013). • In a sample of 66 participants, responding to anxiety treatment in youth did not predict improved quality of life 7 to 19 years later (Benjamin et al., 2013). 	<ul style="list-style-type: none"> • What is the relationship between anxiety disorders and concurrent life satisfaction in youth? Do elevated anxiety symptoms in youth predict decreased life satisfaction at later follow-ups? • Does anxiety treatment in youth impact life satisfaction following acute treatment and at later follow-ups?

Table 2.1 continued

<p>Academic Functioning</p>	<ul style="list-style-type: none"> • Parents and teachers report increased academic impairments for anxious youth compared to peers without anxiety disorders (e.g., Benjamin et al., 1990; Mychailyszyn et al., 2010). • Academic impairments may be more pronounced for youth with comorbid psychopathology, and less pronounced for youth with GAD (Mychailyszyn et al., 2010). • Anxiety symptoms in 1st grade have been found to predict lower performance on standardized achievement tests in 5th (Ialongo et al., 1995) and 8th grade (Grover et al., 2007). • Some findings indicate anxiety disorders in youth are associated with academic underachievement (Wittchen et al., 1998; Woodward & Fergusson, 2001); others do not (Essau et al., 2014). • The presence of an 	<ul style="list-style-type: none"> • Studies suggest that reducing anxiety yields short-term improvement in overall school functioning (e.g., Nail et al., 2014), in GPA (Weems et al., 2009), and on standardized academic achievement tests (Keogh et al., 2006). • No studies have examined the effect of anxiety treatment in youth on academic functioning following acute treatment. 	<ul style="list-style-type: none"> • What is the impact of anxiety disorder (and specific anxiety disorders) on academic performance over time? • Research is needed to clarify the impact of anxiety disorders in youth on academic achievement (and on highest grade completed). Can anxiety severity and/or comorbid diagnoses explain discrepant findings? • Does treating anxiety in childhood affect academic achievement and educational status (highest grade completed)
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Table 2.1 continued

	<p>anxiety disorder in childhood <i>in combination with</i> comorbid psychopathology confers increased risk for academic underachievement (Last, et al., 1997; Lewinsohn et al., 1995; Van Ameringen et al., 2003).</p>		<p>at later follow-ups?</p>
Occupational Functioning	<ul style="list-style-type: none"> • Some findings indicate that any psychopathology in youth, rather than anxiety specifically, is associated with lower household income in adulthood (Wittchen et al., 1998). • Youth anxiety disorders specifically may contribute to difficulty adjusting at work in adulthood (Essau et al., 2014). • Youth anxiety in combination with depression may confer risk for unemployment and lower household income (Last et al., 1997) 	<ul style="list-style-type: none"> • Adult anxiety treatment studies indicate that efficacious treatment is associated with improved occupational functioning, in addition to symptom reduction (Erickson et al., 2009; Linden et al., 2011). • No studies have examined the impact of anxiety treatment in youth on occupational functioning in adulthood. 	<ul style="list-style-type: none"> • Few studies examined the affect of youth anxiety on occupational functioning in adulthood (need replication). • How does youth anxiety specifically, rather than psychopathology in general, impact occupational functioning in adulthood? • Does responding to treatment for anxiety in youth improve occupational outcomes in

Table 2.1 continued

			early adulthood?
Family Functioning	<ul style="list-style-type: none"> • Psychopathology in general, rather than anxiety specifically, is associated with increased family dysfunction (Fristad & Clayton, 1991). • Comorbid psychopathology (Stark et al., 1990) and anxiety severity (Kashani et al., 1990) are associated with increased family dysfunction for anxious youth. • Parenting practices like behavioral control (Hughes et al., 2008) and accommodation of anxiety symptoms (Thompson-Hollands et al., 2014) prevent youth from learning to cope independently and are associated with increased anxiety severity and family distress. • Adolescent anxiety disorders predict increased family problems and lower relationship quality in adulthood, controlling for comorbid psychopathology (Essau et al., 2014). • Anxious youth may 	<ul style="list-style-type: none"> • Successful treatment of youth anxiety disorders is associated with increased family functioning (Keeton et al., 2013; Silverman et al., 2009) and decreased negative parenting behaviors (Settipani et al., 2013; Silverman et al., 2009) that may serve to maintain anxiety over time. 	<ul style="list-style-type: none"> • Few studies examine the impact of anxiety in youth on family functioning in adulthood; findings merit replication. • Do gender differences and type of anxiety disorder in youth (e.g., SoP) differentially predict timing and adjustment to adult roles like pregnancy, parenthood, and marriage? • What is the effect of anxiety treatment in youth on timing and adjustment to adult roles like pregnancy, parenthood, and marriage?

Table 2.1 continued

	<ul style="list-style-type: none"> • be less likely to live independently in adulthood (Last et al., 1997). • Socially anxious girls may be at increased risk for teenage pregnancy (Kessler, 2003). 		<ul style="list-style-type: none"> • What is the effect of anxiety treatment in youth on family functioning and relationship quality in adulthood?
Social Functioning	<ul style="list-style-type: none"> • Youth with elevated anxiety symptoms (Muris & Meesters, 2002), and anxiety disorders (Benjamin et al., 1990) have more teacher-reported problematic peer relationships than non-anxious peers. • Anxious youth demonstrate deficits in social competency, as rated by teachers, parents, and themselves (Chansky & Kendall, 1997; Strauss et al., 1989). • Youth with SoP, but not other anxiety disorders, are perceived as less likeable by peers (Verduin & Kendall, 2008), and report greater difficulty making friends (Scharfstein et al., 2011). • Child anxiety 	<ul style="list-style-type: none"> • Treatment studies suggest that as anxiety decreases, social competency and skill increases (Settipani & Kendall, 2013; Suveg et al., 2009; Wood, 2006). • Treatment response for youth with SoP is associated with enhanced social skills that are maintained up to 5 years post-intervention (Beidel et al., 2006). 	<ul style="list-style-type: none"> • What is the effect of anxiety treatment in youth on social functioning at >5 year follow-up, and during the transition to adulthood? • Social difficulties are pronounced for youth with SoP. What is the effect of responding to treatment for SoP in youth on friendships and relationship quality in emerging adulthood?

Table 2.1 continued

	(Seeley et al., 2011) and SoP specifically (Miers et al., 2013) is associated with impairment in social functioning that extends into adulthood.		
Delinquency and Criminal Behavior	<ul style="list-style-type: none"> Anxiety disorders and related constructs may protect against delinquent behaviors in boys (Rosenblatt et al., 2000; Kerr, 1997); however, boys with elevated anxiety and impulsivity are <i>more</i> likely to report delinquent behaviors than peers (Tillfors et al., 2013). As youth enter adulthood, anxiety in childhood acts as neither a risk nor protective factor (Pullmann, 2000). A history of youth anxiety <i>in combination</i> with substance use increases the likelihood of criminal behavior in adulthood (Copeland et al., 2007). Research in offender populations largely supports that 	<ul style="list-style-type: none"> No studies have examined the effect of anxiety treatment on delinquency and criminal behavior at short- or long-term follow-ups. One study examining CBT for anxiety found rates of oppositional behavior disorder, in addition to anxiety disorder diagnoses, to decrease following treatment (Kendall et al., 2001). Delinquency and criminal behavior was not measured. 	<ul style="list-style-type: none"> Given that (a) a history of youth anxiety when concomitant with substance use may confer risk for criminal behavior (Copeland et al., 2007), and (b) responding to treatment for anxiety in youth predicts fewer substance use problems in adulthood (Benjamin et al., 2013), the effect of early intervention for anxiety on long-term legal outcomes warrants further

Table 2.1 continued

	anxiety disorders neither confer risk for nor protect against recidivism (Constantine et al., 2013; Guebert & Olver, 2014).		research.
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