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Results from the Child/Adolescent Anxiety Extended Long-term Study (CAMELS): Functional Outcomes

Anna J. Swan,
Hassenfeld Children's Hospital at NYU Langone

Philip C. Kendall,
Temple University

Thomas Olino,
Temple University

Golda Ginsburg,
University of Connecticut Health

Courtney Keeton,
Johns Hopkins University School of Medicine

Scott Compton,
Duke University Medical Center

John Piacentini,
University of California, Los Angeles

Tara Peris,
University of California, Los Angeles

Dara Sakolsky,
University of Pittsburgh

Boris Birmaher, and
University of Pittsburgh

Anne Marie Albano
Columbia University

Abstract

Objective: To report functional outcomes from the multi-site *Child/Adolescent Anxiety Multimodal Extended Long-term Study* (CAMELS), which examined the impact of youth anxiety

Correspondence concerning this paper should be addressed to Anna J. Swan, Department of Child and Adolescent Psychiatry, Child Study Center, Hassenfeld Children's Hospital at NYU Langone, 1 Park Avenue, 7th Floor, New York, New York, 10016, United States. anna.swan@nyumc.org; Tel: 843 709 0088 or Philip C. Kendall, Department of Psychology, Temple University, Philadelphia PA pkendall@temple.edu.

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treatment (Cognitive-Behavioral Therapy, CBT, *Coping cat*; Sertraline, SRT; COMB [CBT + SRT]; pill placebo) on (a) global and (b) domain-specific functioning assessed an average of 3.1 times, 3 to 12 years post randomization (first assessment= mean 6.5 yrs post randomization).

Method: 319 of 488 families from the Child/Adolescent Anxiety Multimodal Study (CAMS; Walkup et al., 2008) participated. Growth curve modeling examined the impact of treatment condition and acute treatment outcomes (i.e., response, remission) on global functioning, global and domain-specific impairment, and life satisfaction across follow-up visits. Logistic regressions explored the impact of treatment remission and condition on low frequency events (arrests/convictions) and education.

Results: Treatment responders and remitters demonstrated better global functioning, decreased overall impairment, and increased life satisfaction at follow-up. Treatment remission, but not response, predicted decreased domain-specific impairment (social relationships, self-care/independence, academic functioning), and maintenance of increased life satisfaction across follow-ups. Participants in the CBT condition, compared to pill placebo, demonstrated improved trajectories pertaining to life satisfaction, overall impairment, and impairment in academic functioning. Randomization to CBT or COMB treatment was associated with increasing employment rates. Trajectories for participants randomized to SRT was not significantly different from placebo. Treatment outcome and condition did not predict legal outcomes, school/work variables, or family life.

Conclusion: Positive early intervention outcomes are associated with improved overall functioning, life satisfaction, and functioning within specific domains 6.5 years posttreatment. Treatment type differentially predicted trajectories of functioning. Findings support the positive impact of pediatric anxiety treatment into adolescence and early adulthood.

What is the public health significance of this article?—The findings indicate that successful intervention for youth anxiety is associated with improved functioning, decreased overall impairment, and enhanced life satisfaction an average of 6.5 years later during the transition to late adolescence/early adulthood. CBT (*Coping cat*) was associated with decreasing impairment and increasing life satisfaction over time, compared to pill placebo. Findings support the positive impact of efficacious early intervention for anxiety on later functioning.

Keywords

Child anxiety; Functional outcomes; Follow-up; Emerging Adulthood

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Anxiety disorders are common mental health concerns affecting youth (Costello, Egger, & Angold, 2005). 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 adulthood (Swan & Kendall, 2016). Prior studies suggest that cognitive-behavioral therapy (*Coping cat:* CBT) and medication (sertraline: SRT) are efficacious and reduce symptoms relative to pill placebo. The Child/Adolescent Anxiety Multimodal Study (CAMS) reported approximately 55-60% of youth randomized to monotherapy (SRT or CBT) and 80% of youth randomized to combined therapy (COMB: CBT and SRT) to demonstrate meaningful symptom improvement following 12 weeks of treatment (Walkup et al., 2008). Although some studies have examined impairment in global

and domain-specific functioning immediately following treatment (Swan & Kendall, 2016), the longer-term impact of efficacious treatment on functional outcomes as youth transition into adulthood is limited, particularly for youth treated with medication.

Prior to the CAMS (Walkup et al., 2008), 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) found these medications to be efficacious (Reinblatt & Riddle, 2007). However, there have been no long-term follow-ups. In contrast, several studies have assessed the long-term outcomes (i.e., >5 years) of youth treated with CBT (Barrett, Duffy, Dadds, & Rapee, 2001; Beidel, Turner, & Young, 2006; Benjamin, Harrison, Settipani, Brodman, & Kendall, 2013; Garcia-Lopez et al., 2006; Kendall, Safford, Flannery-Schroeder, & Webb, 2004), and a single study examined outcomes following SRT, CBT and COMB treatment using data from the Child/Adolescent Anxiety Multimodal Extended Long-term Study (CAMELS), a naturalistic follow-up study of CAMS participants (Ginsburg et al., 2014). Most long-term follow-up studies have focused on symptom assessment and diagnostic status, which limits understanding of how intervention impacts functioning beyond symptom-level impairment. Only two report an initial look at functional outcomes. In a sample of 66 participants who received CBT, responder status (defined as the absence of study entry principal disorder) did not predict quality of life or overall impairment seven to nine years later (Benjamin et al., 2013). In the second study, which used a subset of the CAMELS sample (N = 288), responder status (defined as an Independent Evaluator rating of “much improved” or “very much improved”) significantly predicted global functioning four to ten years later, but treatment condition (CBT, SRT, COMB: CBT and SRT, or pill placebo) did not differentially predict (Ginsburg et al., 2014). Ginsburg et al (2014) also reported that youth who responded to acute treatment were more likely to be in remission (defined as loss of all study entry anxiety diagnoses) when assessed once a mean of 6 years later, but did not report on life satisfaction, impairment, or domain-specific functioning. No other studies have examined the effect of treatment type on long-term functional outcomes. Moreover, all >5 year follow-ups 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.

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 over time is needed. The presence of anxiety symptoms in childhood may lead to avoidance of developmentally expected, but anxiety-provoking tasks, across development, contributing to the maintenance or intensification of functional impairments. For example, youth with social anxiety often exhibit deficits in social competence (Scharfstein, Alfano, Beidel, & Wong, 2011), and anxiety-induced avoidance of social situations prevents youth from learning and practicing social skills. The transaction of symptoms and functional impairment can lead to developmental cascades in which the consequences of elevated anxiety symptomatology and related impairment are compounded over time (Masten & Cicchetti, 2010).

Avoidance, the behavioral core of anxiety, may lead youth to miss out on opportunities for social, occupational and academic exploration, limiting resultant satisfaction in these domains. Indeed, the presence of anxiety disorders in adolescence has been linked to decreased life satisfaction, increased difficulty adjusting to work, increased family problems, and lower relationship quality in adulthood (Essau, Lewinsohn, Olaya, & Seeley, 2014). Youth anxiety has also been associated with the development of later comorbid conditions (Kessler, 2003), and prior studies suggest that childhood anxiety in combination with comorbid psychopathology predicts academic underachievement (Last, Hansen, & Franco, 1997; Lewinsohn, Rohde, & Seeley, 1995). In conjunction with substance use, youth anxiety has been associated with increased criminal behavior in adulthood (Copeland, Miller-Johnson, Keeler, Angold, & Costello, 2007). Research examining whether or not efficacious early intervention interrupts these developmental cascades requires a focused examination of functional outcomes, and is currently lacking.

The current study builds upon the initial report of CAMELS outcomes (Ginsburg et al, 2014). The study prospectively examined global functioning, overall and domain-specific impairment (social, familial, educational, occupational, legal) and life satisfaction associated with the four CAMS treatment conditions (CBT, SRT, COMB, Placebo): CAMS participants were assessed annually by an independent evaluator across a five year follow-up window (2011 – 2015) 3 to 12 years post CAMS randomization (first assessment=an average of 6.5 yrs later). Treatment response (i.e. responder, non-responder), remission status (loss of all study entry anxiety diagnoses), and treatment type were examined as predictors of functional outcomes. Because youth anxiety has been linked to concurrent and future functional impairment (Swan & Kendall, 2016), we hypothesized that responders and remitters would report improved functional outcomes. Given the dearth of research examining the differential impact of treatment condition on later functioning, the impact of treatment condition was exploratory.

Method

Participants

Families who participated in CAMS and agreed to be contacted for future studies (465 out of 488 CAMS participants) were eligible for CAMELS. Participants in CAMS were 7-17, met criteria for SAD, GAD, or SoP (*DSM-IV TR*; American Psychiatric Association, 2000), and were randomly assigned to treatment condition. The methodology (Compton et al., 2010), participant features (Kendall et al., 2010), primary (Walkup et al., 2008) and six-month outcomes (Piacentini et al., 2014) have been described elsewhere.

The present sample is comprised of the 319 participants who completed at least one CAMELS assessment and included 176 females (55.2%); mean age at first assessment was 17.63 years (range 11.10 to 25.96 yrs). The racial/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 (Hollingshead, 1979).

Procedure

Assessment Visits.—Participants in CAMELS completed one "long visit" and one "short visit" per year for four years (2011 – 2015). On average, CAMELS participants completed 3.1 "long visits" across the follow-up window (first long visit = mean 6.5 years post CAMS randomization). For long visits, participants completed diagnostic interviews and self-report forms. For short visits, participants completed self-report questionnaires at home. The current study uses long-visit data. Independent evaluators (IE) blind to participants' CAMS treatment condition administered the interviews and completed clinician-rated measures. To facilitate participation for individuals who relocated, some long assessments were conducted via phone. Data collection occurred at the six CAMS sites. All sites had IRB approval.

Measures

CAMS Baseline Assessment Measures

Anxiety Disorders Interview Schedule, Children/Parent version (ADIS-IV-C/P; Silverman & Albano, 1996).: The ADIS-IV-C/P are semi-structured diagnostic interviews to assess anxiety, mood disorders, and other psychopathology in accordance with the *DSM-IV* (American Psychiatric Association, 2000) as reported by youth aged 7-17 years and their parents. During the interviews, diagnosticians assigned 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 evaluator composite diagnosis was used based on clinical judgment using information gleaned from both parent and child interviews. Inter-rater agreement for diagnoses was ICC = 0.82-0.88 (based on a random review of 10% of CAMS 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 SoP) after 12 weeks of treatment.

Clinical Global Impression-Severity and Improvement Scales (CGI-S and I; Guy, 1976).: The CGI-S score is a global rating of baseline anxiety severity (l=not at all ill; 7 =extremely ill). The CGI-I is a global rating of anxiety improvement (l=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" following 12 weeks of treatment. The CGI-I is related to self- and informant-report measures of symptomatology and functional impairment (Zaider, Heimberg, Fresco, Schneier, & Liebowitz, 2003).

Follow-up Measures

Global Assessment of Functioning and Children's Global Assessment Scale (GAF, Endicott, 1976; CGAS, Shaffer, 1983).: The GAF and CGAS are parallel, IE completed forms that measure psychiatric symptoms and global functioning over the previous month (1 is lowest and 100 is highest) for adults (>18 years) and youth (<18 years) respectively. The CGAS and GAF have been extensively studied, and reported to demonstrate adequate psychometric properties (Bird, Canino, Rubio-Stipec, & Ribera, 1987; Hanssen-Bauer, Aalen, Ruud & Heyerdahl, 2007; Hilsenroth et al., 2000) and validity as a measure of

functional competence (Green, Shirk, Hanze, & Wanstrath, 1994). The CGAS was also administered at CAMS baseline.

Health of the Nation Outcome Scales (child and adolescent scales, Gowers et al., 1999; and adult scales, Royal College of Psychiatrists Research Unit, 1995a/b; HoNOS).: The HoNOS scales are IE-completed semi-structured interviews that assess overall burden of psychiatric problems and impairment in functioning within a developmental framework. The six single-item scales assess peer relationships, family life and relationships, self-care and independence (activities of daily living), occupational functioning, academic performance, and school attendance. Functioning is scored 0 (no problems) to 4 (severe problems). For overall impairment, the average score across HoNOS subscales was calculated. The HoNOS family of measures are commonly used, and prior studies have reported the scales to demonstrate satisfactory psychometric properties (Gowers et al., 1999; Pirkis et al., 2005), and sensitivity to change (Bilenberg, 2003; Garralda, 2000).

Quality of Life Enjoyment and Satisfaction Questionnaires (child version, Endicott, Nee, Yang, & Wohlberg, 2006; and adult version, Endicott, Nee, Harrison, & Blumenthal, 1993; Q-LES-Q).: The Q-LES-Q are parallel self-report measures used to assess quality of life and satisfaction for children and adults. Items inquire about mood/ feelings, school/work, getting along with friends and with family, free time, energy level, and overall course of life. Each item is rated from 1 (very poor) to 5 (very good). A raw total score is calculated by summing the first 14 items of each measure, with a maximum possible total score of 70. This instrument has been found to have retest reliability (ICC = 0.78, Endicott et al., 2006), and sensitivity to treatment (Endicott et al., 2014). In our sample, Cronbach's α for the total score ranged from 0.87 – 0.97 across visits.

Education and Employment forms: Youth self-reported their highest level of education (high school grade level, graduated high school, college grade level, or graduated college) and employment status (whether or not they had a paid job). Educational achievement was coded as (1) graduated high school for those who endorsed graduating high school or attending college, and (2) started college, as indicated by those who endorsed their highest level of education as 1st year of college or higher.

Legal Functioning: Youth legal outcomes were reported by parents and youth, and the "or" rule was applied in case of discrepancy: Youth were considered to have an arrest or conviction history if it was reported by either parents *or* youth.

Additional Measures

Demographic Information.: Family composition, family income, living arrangements, and SES (according to the Hollingshead index) data were collected from parents (and older adolescents).

Mental Health Service Utilization.: Mental health service utilization was measured using the ADIS Supplemental Services Form (SSF) which assesses medication use and psychotherapy or counseling for mental health. Participants were divided into two groups at

each assessment time-point: (1) no medication or therapy or (2) medication and/or therapy since their last CAMELS assessment. 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 at CAMS randomization, race, ethnicity, SES) and clinical characteristics (anxiety severity, responder and remission status) between CAMS participants who did and did not participate in CAMELS, and have previously been reported (see Ginsburg et al., under review). The CAMELS sample included more females, fewer Hispanics, and was of higher SES. There were site differences in CAMELS recruitment, and CAMS baseline anxiety severity (CGI-S) predicted worse treatment outcomes in CAMS (Compton et al., 2014). Functional outcomes (e.g., the achievement of developmental milestones) are tied to developmental stage. Accordingly, sex, ethnicity, SES, site (dummy-coded with Duke as the reference group), CGI-S, and age at first CAMELS assessment were controlled in all analyses. Interim mental health service utilization (ADIS SSF) and CAMS baseline CGAS scores were also controlled for 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 methods (Enders & Bandalos, 2001). 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. Given that data was missing for 71% of participants at visit 5, these data were excluded from analyses. FIML is robust at handling missing data of the amounts present in CAMELS visits 1 through 4 given multiple assessments per participant (an average of 3.1 CAMELS visits; Enders & Bandalos, 2001). 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, as well as CAMS baseline SES, CGAS and CGI-S scores were entered as continuous predictors. CAMS week 12 treatment response, remission, condition, site, sex, ethnicity, and race were entered as categorical model predictors. No examined variable significantly predicted number of CAMELs assessments completed (ps > .05). Data can be assumed to be missing at random.

Data-analytic approach.: A multilevel modeling (MLM) framework was used to estimate growth models. Given that outcomes were measured using continuous time, we estimated linear and quadratic effects. To accommodate repeated measures for individuals in real time, analysis type was specified as TWOLEVEL and RANDOM in Mplus. Within the MLM 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 and quadratic slope). Separate models were fit for each outcome variable (p < .05).

First we computed an unconditional growth model, which includes parameters for the intercept (estimated score at CAMELS first assessment), linear slope (linear rate of change over time), and quadratic slope (quadratic rate of change over time) to evaluate functional trajectories over time. Significant linear or quadratic slope variance indicates variability in individuals' growth rates. To test the impact of treatment outcomes and condition, we then computed a conditional growth model for each functional outcome. For outcomes in which quadratic slope neither predicted rate of change nor demonstrated significant individual differences in growth rates, only linear slope was included in the conditional models. For 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 nonsignificant in the unconditional model (Singer & Willet, 2003), and in keeping with prior research (Zalewski, Thompson, & Lengua, 2015; Wolk et al., 2016). All predictor variables were mean-centered.

The impact of treatment response/remission and treatment condition on global functioning, overall impairment, and life satisfaction.: The MLM framework was used to estimate growth models in Mplus for: global functioning (CGAS/GAF scores), youth-reported life satisfaction (Q-LES-Q average score), and overall impairment (average HoNOS score). In this and all MLM models, sex, ethnicity, CAMS Site, age at first CAMELs assessment, treatment outcome (response/remission status), treatment condition dummy-coded with the placebo condition as the reference group, and CAMS baseline SES, baseline severity (CGI-S), and baseline CGAS scores were entered as time invariant predictor variables. Mental health service utilization (as reported on the 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. Acute treatment outcome (response/remission) and condition were examined as predictors of the intercept and slope for individual functional outcomes. Separate models were conducted for treatment response and remission status.

The impact of treatment response/remission and treatment condition on domain-specific functional and legal outcomes.: We computed growth models within the MLM framework as described above to test the impact of treatment outcome (response and remission, in separate models) and treatment condition on domain-specific functional outcomes measured by the HoNOS subscales. Separate models were fit for each HoNOS subscale. For the HoNOS subscale assessing occupational impairment, only participants who self-reported having a job (n = 213) were selected for analysis. 6.3% of the sample reported having an arrest record, and 2.8% 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, we conducted logistic regressions to examine the impact of treatment remission and condition on the likelihood of participants reporting an arrest or conviction record at any CAMELS assessment (annual visit 1 through 4) measured by the legal information form, controlling for sex, ethnicity, CAMS Site, age at first CAMELS assessment, and CAMS baseline: SES, CGAS, and CGI-S.

The impact of treatment remission and treatment 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 remission 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, CAMS Site, and CAMS baseline: SES, CGAS and CGI-S scores.

We estimated growth models within the MLM framework, as previously described, to examine the impact of treatment outcome remission and treatment condition on the achievement of developmental milestones (employment and living independently from parents). 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. The results of unconditional growth curve models are presented in supplementary Table 1, available online. In the unconditional models, quadratic growth factors were positive and significantly different from 0 for self-care/independence and employment: The likelihood of participants being employed, and demonstrating impairment in self-care/independence, increased at increasing rates across CAMELS follow-ups. For all other outcomes, quadratic growth factors were not significant predictors, and the more parsimonious linear models are reported. For family life and relationships, the linear slope growth factor was negative, indicating decreased impairment in family functioning across visits. The linear slope growth factor was not significantly different from 0 for any other outcome measure. The linear slope variance was significant for CGAS/GAF scores, and the quadratic slope variance was significant for employment. For all other outcomes, linear and quadratic slope variance was not significant; therefore, slope was treated as a fixed effect set at 0 in the conditional models. The intercept variance was significant for all outcome measures with the exception of occupational impairment.

The impact of treatment response/remission and treatment condition on global functioning, life satisfaction, and overall impairment

Results of linear growth models examining the impact 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 (average HoNOS score) are summarized in Table 2. Consistent with hypotheses, response and remission status significantly predicted global functioning an average of 6.5 years post CAMS randomization at participants' first CAMELs assessment (intercept). Neither treatment response nor remission significantly predicted differing rates of change in global functioning across the follow-up period (slope); thus, favorable acute treatment outcomes predicted improved global functioning that was maintained across visits. CAMS treatment condition predicted neither the intercept nor slope of CGAS/GAF scores across the follow-up period.

Response and remission status also significantly predicted life satisfaction scores at first CAMELS assessment (intercept). Treatment response, but not remission, significantly predicted differences in the slope of life satisfaction scores across the follow-up period. 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. Thus, in support of study hypotheses, participants who responded favorably to anxiety intervention as a child or adolescent reported increased life satisfaction at their first CAMELS assessment an average of 6.5 years later, and increased life satisfaction was maintained across follow-up visits for those whose anxiety symptoms fully remitted after acute treatment.Treatment condition did not predict initial life satisfaction scores; however, randomization to CBT predicted increasing satisfaction scores across follow-up, compared to decreasing scores for youth randomized to placebo. No other treatment condition predicted trajectories of change.

Participants classified as CAMS treatment responders and remitters were consistently rated as less impaired overall (HoNOS average score) than non-responders and non-remitters across follow-up visits. Neither acute treatment response nor remission predicted differing rates of change in functional status over time. Participants in the CBT condition demonstrated a faster decline in average HoNOS scores across the follow-up period compared to participants assigned to the placebo condition, which indicates decreasing overall impairment. No other active treatment condition was significantly different from the placebo condition in predicting overall impairment over time.

Of the demographic and clinical characteristics entered as control variables, CAMS baseline SES and sex predicted global functioning and overall impairment at first CAMELS assessment: Participants whose families reported higher baseline SES and who were male demonstrated better outcomes. Higher SES, but not gender, also predicted higher life satisfaction scores. No demographic or clinical characteristics predicted the slope of these models.

The impact of treatment remission/response and treatment condition on domain-specific functional and legal outcomes

Results of linear and quadratic growth models assessing the impact of CAMS treatment remission status and treatment condition on domain-specific functioning are summarized in Tables 3 and 4. Remission status significantly predicted impairment in social and peer relationships, activities of daily living (self-care/independence), and school performance at first CAMELS assessment (intercept). Remission status did not predict the slope of any domain-specific HoNOS scores, indicating that remitters demonstrated decreased domain-specific impairment at their initial visit that was maintained across the CAMELS follow-up period, compared to non-remitters. We also examined response status as a predictor of domain-specific outcomes. Response status predicted neither the intercept nor the slope of HoNOS subscales (ps > .05). Neither treatment response nor remission was associated with differences in family life, school attendance, or occupational functioning.

Randomization to CBT predicted improved functional trajectories specific to school performance. Although not initially different from participants randomized to placebo,

participants in the CBT condition demonstrated decreasing problems across the follow-up period. No other treatment condition significantly predicted trajectories of functioning. No treatment condition significantly predicted differences in social functioning, self-care/independence, family life, school attendance, or occupational functioning.

Of the control variables in the model, sex predicted impairment in family functioning at first CAMELs assessment: Male participants were rated as experiencing fewer family difficulties than female participants. SES was associated with school performance and attendance: Participants whose families reported higher SES at CAMS baseline were rated as having fewer school-related problems. Participants who were older at their first CAMELS assessment exhibited more work-related problems. No control variables predicted the slope of these models.

Neither remission status nor treatment condition predicted the likelihood of self-reporting an arrest or conviction record; however, sex, age, and ethnicity were significantly associated. Males, older participants, and Hispanic participants were more likely to report being arrested (see Table 5). Given that only 8.2% of the sample was Hispanic, results should be interpreted with caution.

The impact of treatment remission and condition on the achievement of developmental milestones

Logistic regressions examined the impact of treatment remission 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% reported graduating high school, and 80.1% reported starting college. Neither treatment remission nor treatment 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 and to start college (See Table 5).

At CAMELS enrollment, 53.2% of youth reported having a job, and 9.2% of youth reported living away from their parents. Both remission status and treatment condition predicted employment outcomes: remitters were more likely to have a job at first CAMELS assessment, and the discrepancy between remitters and nonremitters decreased over the follow-up period. Randomization to CBT and COMB treatment, compared to placebo, predicted positive linear and negative quadratic slope: participants randomized to active treatment demonstrated increasing employment rates across follow-up, and this increasing rate slowed over time. Of the control variables, participants who were older and participants with higher baseline severity ratings (CGI-S) were more likely to report having a job at their first CAMELS assessment, and this effect decreased over follow-up. Participant sex, ethnicity, and baseline CGAS scores also predicted linear slope: males, Hispanic participants, and participants with higher baseline global functioning demonstrated slower rates of employment across follow-up. Neither remission status nor treatment condition were significantly associated with the achievement of independent living; however, participants who were older and participants with higher CAMS baseline CGAS scores were more likely

to be living away from their parents at their first CAMELS assessment. Results are summarized in Tables 3 and 4.

Discussion

The present findings indicate that there were meaningful positive long-term functional benefits 3 to 12 years after treatment. This first study to examine the impact of treatment outcomes (response, remission) and treatment type (CBT, SRT, COMB, pill placebo) on functional outcomes identified differential global and domain-specific functional outcomes across multiple follow-up assessments during the transition from adolescence to adulthood.

Global Functioning and Overall Impairment

Anxiety can be seen as a gateway disorder (Kessler, 2003), and youth anxiety is associated with both short- and long-term sequelae (Swan & Kendall, 2016). The present results indicate that successfully treating pediatric anxiety disorders 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 treatment response and remission was maintained across a four-year follow-up period. Throughout development, anxious youth may have difficulty adjusting to changing roles and expectations, thus yielding decreased life satisfaction and worse functioning. The present study's results indicate that effective early intervention mitigates this relationship and has a positive effect on overall functioning.

Life Satisfaction

Study results revealed that favorable youth treatment outcomes (response and remission), as well as CAMS baseline SES resulted in enhanced life satisfaction at first CAMELS visit. These positive results are consistent with prior research suggesting that psychological factors like positive affect, as well as demographics (income, education, and social class) are correlated with quality of life (Mohanty, 2014). Emerging adulthood, the developmental period from late teens to early twenties, is often associated with increased life satisfaction (Galambos, Barker, & Krahn, 2006); however, anxious youth may be avoidant of and less likely to explore educational/career options and relationships, resulting in decreased life satisfaction (Albano & Pepper, 2013). The present results indicate that successfully treating anxiety in youth improves life satisfaction in emerging adulthood. Of note, the positive effect of response (but not remission) status attenuated across time. Remission(defined as loss of all study-entry anxiety disorders) is a stricter definition of treatment outcome than response (defined as a rating of "improved" or "much improved" on the CGI-I); and in the CAMS trial, remission rates were significantly lower than response rates (Ginsburg et al., 2011). Findings suggest that early intervention that meets this more exacting definition of treatment outcome - remission of youth anxiety - is associated with sustained, increased life satisfaction.

Domain-Specific Impairment and Developmental Milestones

Remission (but not response) was significantly associated with some domain-specific functional outcomes. Results highlight the impact of early intervention resulting in the

complete remission of anxiety disorders on select functional outcomes, namely social and peer relationships, self-care/independence (activities of daily living), and academic performance.

Of note, youth with a social anxiety disorder diagnosis at CAMS baseline were less likely to be in remission following acute treatment, compared to youth without social anxiety (Ginsburg et al., 2011). Social anxiety has been linked to increased social difficulties, even when compared to other anxiety disorders like GAD (Scharfstein et al., 2011; Verduin & Kendall, 2008), as well as increased academic impairment (Bernstein, Bernat, Davis, & Layne, 2008; Van Ameringen, Mancini & Farvolden, 2003). It is possible that the decreased representation of social anxiety disorder in youth who remitted following acute treatment helps to explain why findings indicate that youth anxiety remission leads to improved social and academic outcomes. Additional research is needed to examine if the persistence of specific anxiety disorder diagnoses like social anxiety confers increased risk for impaired domain-specific functioning across follow-up.

As anxious youth enter adulthood, fear and avoidance of new situations may interfere with youths' ability to develop independence and achieve important developmental tasks (e.g., independent living; Last et al., 1997). Study results suggest that participants whose anxiety disorders remitted following intervention experienced fewer problems related to self-care and independence (activities of daily living); however, remission status was not significantly associated with the achievement of independent living. Instead, participants who were older, of higher SES and/or functioning well at CAMS baseline were more likely to be living away from parents, suggesting a role for family resources and baseline functioning on independent living. In contrast, remission status did predict employment. Participants who remitted were more likely to report having a job at their first assessment, and this effect decreased across follow-ups. Remission status did not predict impairment in occupational functioning.

Prior research supports the relationship between youth anxiety and increased academic difficulties (Mychailyszyn, Mendez, & Kendall, 2010). In the current study, remission status predicted decreased academic impairment an average of 6.5 years post CAMS randomization, suggesting that reducing anxiety symptoms in youth yields positive long-term educational outcomes. However, research findings on highest grade completed are mixed, with some studies supporting a relationship between youth anxiety disorders and decreased university attendance (Wittchen, Nelson, & Lachner, 1998) and others not (Essau et al., 2014). In the current study, SES, but not remission status, significantly predicted educational achievement (high school graduation/college enrollment). Participants whose families reported higher CAMS baseline SES also exhibited fewer impairments in academic performance and attendance, suggesting that features of SES (e. g., parental education and income) are meaningful predictors of educational status above youth anxiety symptomatology.

Neither response nor remission status significantly predicted problems with occupational impairment, or family life. Similarly, remission status did not predict legal outcomes. Of note, the frequency of participants reporting an arrest or conviction was very low (6.3% and 2.8% 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 use (Copeland et al., 2007). Future work examining how proximal factors (e.g., substance use, anxiety disorders and comorbid diagnoses) impact domain-specific functional outcomes is warranted. Of note, ethnicity *was* significantly associated with arrest record. Race and ethnicity are known to play a role in the criminal justice system: Relative to their representation in the US population, Hispanic individuals are much more likely than non-Hispanic Caucasians to be incarcerated following an arrest (Harris, Steffensmeier, Ulmer, & Painter-Davis, 2009). The current study found that, among a sample of anxious youth, Hispanic individuals were more likely to experience legal concerns, and this finding mirrors research on how Hispanic individuals may be disadvantaged in the criminal justice system more broadly. Given that only 8.2% of the sample was Hispanic, results should be interpreted cautiously.

Treatment Condition

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 an average of 6.5 years after randomization, but randomization to CBT or COMB (as compared to placebo) significantly predicted better trajectories of change for some functional outcomes. Participants who received CBT demonstrated a faster improvement in overall functioning and academic performance, as well as increasing life satisfaction compared to participants randomized to placebo. Participants randomized to CBT or COMB treatment demonstrated increasing rates of employment across follow-up compared to placebo. Results are congruent with findings from the Survey of Outcomes Following Treatment for Adolescents with Depression (SOFTAD), in which participants randomized to placebo were reported to decline in functioning across follow-up compared to those randomized to active treatment (Peters et al., 2015). Given that the impact of treatment condition on functional outcomes was an exploratory aim, the present results should be interpreted with caution. It is possible that participants assigned to CBT treatment applied skills learned in therapy to novel challenges, thus improving functional outcomes over time; however, further research examining mechanisms of change (cognitive, behavioral, affective, and/or biological; e.g., Hale et al., 2017; Kendall et al., 2016) is also warranted to clarify what features of early effective intervention contributed to increasing positive outcomes over time, and why randomization to other active treatments was not similarly associated with improved trajectories.

Demographic and Clinical Predictors

Of the demographic and clinical characteristics examined as control variables, participant gender and baseline SES emerged as frequent predictors of functional outcomes. Female participants were more likely to experience increased overall impairment, decreased global functioning, and more problems with family life. This finding mirrors Ginsburg et al's (2014) report that female participants in CAMS were less likely to be free from anxiety disorders than their male counterparts 6.5 years post-treatment. Moreover, participants whose families were of lower SES in CAMS were more likely to experience school-related difficulties, increased overall impairment, decreased global functioning, and decreased life satisfaction at follow-up. These findings suggest that girls and youth with low SES

backgrounds are at particular risk for increased difficulties in emerging adulthood, highlighting the importance of effective early intervention and continuing support.

Future directions

The current study had several methodological strengths. The study design was prospective and longitudinal, and functional outcomes were assessed via both IE and self-reports. We examined (1) outcomes at first CAMELS assessment and (2) trajectories of change annually across a four-year follow-up period, and the study benefitted from a multi-site design and sufficient sample size. Limitations are worth noting. The study design was naturalistic, which restricts 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 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. Additionally, domain-specific functional outcomes were only assessed using the single-item, independent-evaluator rated HoNOS subscales, and inter-rater reliability was not calculated for the HoNOS subscales. Similarly, inter-rater reliability was not available for CGAS and GAF ratings. Although prior studies demonstrated adequate psychometric properties for the HoNOS (Pirkis et al., 2005), as well as the GAF and CGAS (Hanssen-Bauer et al., 2007), the lack of measurement of inter-rater reliability is a limitation of the reported findings. Future research using information from self-report measures is warranted. Lastly, the current study restricted predictors of functional outcomes to CAMS treatment outcomes and active treatments compared to placebo. Given that youth anxiety disorders have been linked to continued anxiety impairment in adulthood, and the development of commonly comorbid concerns (e.g., depression, Cummings, Caporino, & Kendall, 2014), future research needs to examine the relationship between concurrent psychopathology and functioning during the follow-up period, additional moderators and mediators between response/remission status and functional outcomes, and the relative impact of active treatments compared to each other on functional outcomes.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1.

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

	Visit 1 *n*= 319		Visit 2 *n*= 238		Visit 3 *n*= 219		Visit 4 *n*= 207	
Variable	***m***	***SD***	***m***	***SD***	***m***	***SD***	***m***	***SD***
Age	17.63	3.41	18.29	3.38	19.15	3.31	20.09	3.23
Years since CAMS	6.52	1.65	7.23	1.68	8.09	1.45	9.04	1.37
CGAS/GAF	62.84	13.57	63.61	14.38	61.43	13.83	63.44	14.7
Q-LES-Q	52.90	9.55	53.13	10.13	53.24	10.22	53.33	9.98
HoNOS								
HoNOS Avg	0.80	0.68	0.68	0.66	0.73	0.73	0.71	0.67
Social/Peer Relationships	1.16	1.17	1.14	1.19	1.05	1.21	1.06	1.19
Family life/Relationships	1.22	1.18	0.99	1.08	0.96	1.09	0.88	1.04
Activities of daily living	0.59	0.86	0.51	0.80	0.60	0.82	0.66	0.85
Academic functioning	0.64	1.02	0.46	0.88	0.61	1.05	0.45	0.87
School Attendance	0.36	0.90	0.21	0.70	0.32	0.79	0.36	0.82
Occupation/Activities	0.30	0.76	0.25	0.67	0.32	0.78	0.35	0.78
	Percentage		Percentage		Percentage		Percentage	
Developmental Milestones								
Had a paid job, %	53.2		48.6		54.3		63.3	
Living independently, %	9.2		10.1		13.1		23.6	
Graduated high school, %	37.0		44.2		49.7		64.5	
Started college, %	29.3		36.3		41.6		50.5	
ADIS SSF								
Any Tx, %	69.7		45.7		52.3		47.8	

Note. ADIS SSF = Anxiety Disorders Interview Schedule, Supplemental Services Form; Any Tx = Received interim medication, therapy, or both for mental health; 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; *m* = mean; *SD* = standard deviation; % = percentage.

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Table 2.

Growth curve models testing the impact of treatment outcomes (response/remission) and treatment condition on global functional outcomes

Maximum Likelihood Effects							
	Response				Remission		
	CGAS/GAF	Q-LES-Q	Average HoNOS		CGAS/GAF	Q-LES-Q	Average HoNOS
Effect	Estimate (SE)	Estimate (SE)	Estimate (SE)	Effect	Estimate (SE)	Estimate (SE)	Estimate (SE)
Intercept	62.66 (0.87)***	53.06 (0.63)***	0.78 (0.05)***	Intercept	62.91 (0.87)***	53.13 (0.61)***	0.78 (0.05)***
Slope	−0.33 (0.57)	−0.34 (0.41)	−0.02 (0.03)	Slope	−0.52 (0.57)	−0.39 (0.41)	−0.02 (0.03)
Var (Intercept)	85.78 (9.42)***	45.55 (5.88)***	0.20 (0.03)***	Var (Intercept)	86.28 (9.04)***	143.50 (45.00)***	0.20 (0.03)***
Var (Slope)	4.63 (1.59)**	0.00 (0.00)	0.00 (0.00)	Var (Slope)	4.63 (1.58)**	0.00 (0.00)	0.00 (0.00)
Predictors of Intercept				*Predictors of Intercept*			
Response status	3.33 (1.53)*	4.01 (1.26)**	−0.16 (0.08)*	Remission status	4.12 (1.44)**	3.73 (1.09)**	−0.22 (0.07)**
COMB Tx	1.20 (2.16)	−2.21 (1.62)	0.00 (0.11)	COMB Tx	1.30 (2.05)	−1.56 (1.59)	0.01 (0.10)
SRT Tx	1.93 (2.03)	−0.77 (1.50)	−0.04 (0.10)	SRT Tx	1.96 (2.00)	−0.54 (1.48)	−0.04 (0.10)
CBT Tx	1.12 (2.09)	−1.05 (1.73)	−0.01 (0.11)	CBT Tx	1.37 (2.02)	−0.58 (1.65)	−0.02 (0.10)
Sex	3.43 (1.34)*	1.82 (1.03)	−0.14 (0.07)*	Sex	3.45 (1.33)**	1.78 (1.03)	−0.14 (0.07)*
SES	0.15 (0.07)*	0.12 (0.05)*	−0.01 (0.00)*	SES	0.15 (0.06)*	0.12 (0.05)*	−0.01 (0.00)*
Ethnicity	−3.02 (2.93)	0.48 (2.36)	0.06 (0.14)	Ethnicity	−3.01 (2.95)	0.51 (2.38)	0.06 (0.15)
Baseline CGAS	0.14 (0.14)	0.16 (0.09)	−0.01 (0.01)	Baseline CGAS	0.11 (0.14)	0.14 (0.09)	0.00 (0.01)
Baseline CGI-S	−0.23 (1.22)	0.97 (0.89)	0.04 (0.06)	Baseline CGI-S	0.13 (1.22)	1.20 (0.92)	0.01 (0.06)
Visit 1 Age	0.02 (0.24)	−0.25 (0.20)	0.00 (0.01)	Visit 1 Age	−0.03 (0.24)	−0.27 (0.20)	0.00 (0.01)
Predictors of slope				*Predictors of slope*			
Response status	−0.11 (0.70)	−1.13 (.51)*	−0.03 (0.03)	Remission status	−0.24 (0.66)	−0.68 (0.46)	−0.02 (0.03)
COMB Tx	−0.27 (.95)	1.38 (0.73)	−0.03 (0.04)	COMB Tx	−0.21 (0.87)	1.06 (0.71)	−0.04 (0.04)
SRT Tx	−0.25 (0.82)	0.80 (0.69)	−0.04 (0.04)	SRT Tx	−0.23 (0.82)	0.71 (0.70)	−0.05 (0.04)
CBT Tx	0.84 (0.87)	1.72 (0.73)*	−0.09 (0.04)*	CBT Tx	0.86 (0.85)	1.56 (0.72)*	−0.09 (0.04)*
Gender	−0.05 (0.60)	−0.51 (0.43)	0.04 (0.03)	Gender	−0.06 (0.60)	−0.46 (0.43)	0.04 (0.03)
SES	0.02 (0.03)	0.00 (0.02)	0.00 (0.00)	SES	0.02 (0.03)	0.00 (0.02)	0.00 (0.00)
Ethnicity	1.59 (1.14)	−0.75 (0.86)	0.00 (0.06)	Ethnicity	1.61 (1.14)	−0.81 (0.84)	−0.01 (0.06)

Maximum Likelihood Effects							
	Response				Remission		
Effect	CGAS/GAF Estimate (SE)	Q-LES-Q Estimate (SE)	Average HoNOS Estimate (SE)	Effect	CGAS/GAF Estimate (SE)	Q-LES-Q Estimate (SE)	Average HoNOS Estimate (SE)
Baseline CGAS	0.06 (0.06)	0.00 (0.04)	0.00 (0.00)	Baseline CGAS	0.06 (0.06)	0.01 (0.04)	0.00 (0.00)
Baseline CGI-S	0.02 (0.54)	−0.37 (0.38)	−0.02 (0.03)	Baseline CGI-S	−0.01 (0.55)	−0.36 (0.38)	−0.02 (0.03)
Visit 1 Age	0.07 (0.09)	0.10 (0.08)	0.00 (0.01)	Visit 1 Age	0.06 (0.09)	0.12 (0.08)	0.00 (0.01)

Note. CGAS/GAF = Children's Global Assessment Scale and Global Assessment of Functioning; CGI-S = Clinical Global Impression-Severity; Q-LES-Q = Quality of Life Enjoyment and Satisfaction Questionnaires; HoNOS = Health of the Nation Outcome Scales, Average HoNOS = Average score across all HoNOS 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; Gender: 0 = Female, 1 = Male; Ethnicity: 0 = Non-Hispanic, 1 = Hispanic;

*** $p<.001$

** $p<.01$

* $p<.05$.

Table 3.

Linear Growth curve models testing the impact of remission status and treatment condition on domain-specific functional outcomes

	Maximum Likelihood Effects					
	HoNOS subscales					Milestones
Effect	**Social/Peer Relationships Estimate (SE)**	**Family life Estimate (SE)**	**School Performance Estimate (SE)**	**School Attendance Estimate (SE)**	**Occupation/Activities (*n* = 213) Estimate (SE)**	**Independent Living Estimate (SE)**
Intercept	1.10 (0.07) ***	1.23 (0.07) ***	0.59 (0.07) ***	0.27 (0.06) ***	0.18 (0.08) **	--
Slope	0.03 (0.05)	−0.15 (0.05) **	−0.06 (0.04)	0.05 (0.05)	0.05 (0.05)	0.84 (0.34) *
Var (Intercept)	0.53 (0.06) ***	0.41 (0.06) ***	0.25 (0.06) ***	0.11 (0.04) **	0.09 (0.05)	4.70 (1.38) **
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)
Predictors of intercept						
Remission status	−0.30 (0.13) *	−0.14 (0.13)	−0.28 (0.12) *	0.02 (0.11)	−0.30 (0.17)	−0.57 (0.54)
COMB Tx	−0.20 (0.19)	0.09 (0.19)	0.13 (0.19)	0.09 (0.16)	0.04 (0.21)	0.16 (0.89)
SRT Tx	−0.14 (0.20)	0.00 (0.17)	0.06 (0.18)	0.19 (0.15)	−0.20 (0.20)	−0.44 (0.80)
CBT Tx	−0.14 (0.20)	0.01 (0.18)	0.09 (0.17)	−0.04 (0.15)	0.24 (0.27)	−1.22 (0.77)
Sex	−0.21 (0.12)	−0.43 (0.11) ***	0.05 (0.10)	−0.01 (0.10)	−0.23 (0.12)	−0.26 (0.52)
SES	−0.01 (0.01)	0.00 (0.01)	−0.01 (0.01) *	−0.01 (0.01) *	0.00 (0.01)	0.09 (0.04) *
Ethnicity	0.02 (0.27)	−0.14 (0.24)	0.25 (0.22)	0.06 (0.20)	0.29 (0.30)	−2.47 (1.33)
Baseline CGAS	−0.02 (0.01)	0.00 (0.01)	−0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.12 (0.05) *
Baseline CGI-S	0.04 (0.11)	0.11 (0.11)	−0.15 (0.10)	0.10 (0.00)	−0.03 (0.14)	0.37 (0.51)
Visit 1 Age	0.02 (0.02)	−0.04 (0.02)	−0.02 (0.02)	−0.01 (0.02)	0.05 (0.02) **	0.75 (0.17) ***
Predictors of slope						
Remission status	−0.05 (0.05)	0.00 (0.06)	−0.03 (0.06)	−0.06 (0.06)	0.12 (0.08)	0.00 (0.31)
COMB Tx	0.01 (0.07)	−0.14 (0.09)	−0.06 (0.09)	−0.02 (0.10)	0.01 (0.09)	0.00 (0.30)
SRT Tx	−0.10 (0.07)	−0.06 (0.09)	−0.04 (0.09)	−0.11 (0.09)	0.10 (0.10)	0.00 (0.15)
CBT Tx	−0.08 (0.07)	−0.09 (0.09)	−0.18 (0.09) *	−0.04 (0.09)	−0.17 (0.11)	0.00 (0.44)
Sex	0.03 (0.05)	0.08 (0.05)	0.06 (0.05)	0.03 (0.06)	0.11 (0.07)	0.00 (0.12)
SES	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.03)
Ethnicity	0.02 (0.09)	0.15 (0.10)	−0.14 (0.12)	−0.14 (0.10)	−0.21 (0.15)	0.00 (0.51)

	Maximum Likelihood Effects					
	HoNOS subscales					Milestones
Effect	**Social/Peer Relationships Estimate (SE)**	**Family life Estimate (SE)**	**School Performance Estimate (SE)**	**School Attendance Estimate (SE)**	**Occupation/Activities (*n* = 213) Estimate (SE)**	**Independent Living Estimate (SE)**
Baseline CGAS	0.00 (0.01)	0.00 (0.01)	0.00 (0.01)	−0.01 (0.01)	−0.01 (0.01)	0.00 (0.05)
Baseline CGI-S	−0.04 (0.05)	−0.02 (0.05)	0.01 (0.06)	0.00 (0.04)	−0.02 (0.07)	0.00 (0.19)
Visit 1 Age	0.00 (0.01)	−0.01 (0.01)	−0.02 (0.01)	0.00 (0.01)	−0.01 (0.01)	0.00 (0.05)

Note. HoNOS = Health of the Nation Outcome Scales, higher scores indicate greater impairment; CGI-S = Clinical Global Impression-Severity; CGAS = Children's Global Assessment Scale; Var = Residual Variance; COMB tx = CAMS medication and therapy treatment condition; SRT tx = CAMS medication treatment condition; CBT tx = CAMS therapy treatment condition; Gender: 0 = Female, 1 = Male; Ethnicity: 0 = Non-Hispanic, 1 = Hispanic;

*** $p<.001$

** $p<.01$

* $p<.05$.

Table 4.

Quadratic growth curve models testing the impact of remission status and treatment condition on domain-specific functional outcomes

Maximum Likelihood Effects		
	HoNOS subscale	**Milestones**
Effect	**Self-care/Independence Estimate (SE)**	**Employment Estimate (SE)**
Intercept	0.59 (0.05)***	−0.69
Linear Slope	−0.09 (0.07)	−0.55 (0.34)
Quadratic Slope	0.04 (0.02)	0.18 (0.11)
Var (Intercept)	0.21 (0.04)***	3.59 (0.996)***
Var (Linear Slope)	0.00 (0.00)	0.00 (0.00)
Var (Quadratic Slope)	0.00 (0.00)	0.00 (0.00)
Predictors of intercept		
Remission status	−0.35 (0.10)***	0.82 (0.41)*
COMB Tx	0.14 (0.14)	0.39 (0.63)
SRT Tx	0.02 (0.14)	−0.59 (0.64)
CBT Tx	0.12 (0.14)	−0.28 (0.56)
Sex	−0.06 (0.09)	0.05 (0.37)
SES	−0.01 (0.00)	0.13 (0.09)
Ethnicity	0.35 (0.22)	0.64 (0.66)
Baseline CGAS	0.00 (0.01)	−0.002 (0.03)
Baseline CGI-S	0.04 (0.08)	0.70 (0.34)*
Visit 1 Age	0.02 (0.02)	0.63 (0.09)***
Predictors of linear slope		
Remission status	0.08 (0.14)	−0.54 (0.09)***
COMB Tx	−0.12 (0.21)	0.38 (0.14)**
SRT Tx	−0.31 (0.20)	−0.18 (0.14)
CBT Tx	−0.21 (0.22)	1.26 (0.14)***
Sex	0.11 (0.13)	−0.48 (0.08)***
SES	0.00 (0.01)	−0.03 (0.02)
Ethnicity	−0.29 (0.27)	−1.15 (0.22)***
Baseline CGAS	0.00 (0.01)	−0.03 (0.01)**
Baseline CGI-S	−0.18 (0.11)	−0.25 (0.08)**
Visit 1 Age	−0.03 (0.02)	−0.10 (0.01)***
Predictors of quadratic slope		
Remission status	−0.02 (0.05)	0.24 (0.07)**
COMB Tx	0.00 (0.08)	−0.25 (0.12)*
SRT Tx	0.08 (0.08)	−0.02 (0.12)
CBT Tx	0.02 (0.08)	−0.44 (0.11)***

Maximum Likelihood Effects		
	HoNOS subscale	Milestones
Effect	Self-care/Independence Estimate (SE)	Employment Estimate (SE)
Sex	−0.05 (0.04)	0.08 (0.07)
SES	0.00 (0.00)	0.01 (0.02)
Ethnicity	0.15 (0.09)	0.26 (0.17)
Baseline CGAS	0.00 (0.00)	0.01 (0.01)
Baseline CGI-S	0.06 (0.04)	0.08 (0.06)
Visit 1 Age	0.01 (0.01)	0.01 (0.01)

Note. HoNOS = Health of the Nation Outcome Scales, higher scores indicate greater impairment; CGI-S = Clinical Global Impression-Severity; CGAS = Children's Global Assessment Scale; Var = Residual Variance; COMB tx = CAMS medication and therapy treatment condition; SRT tx = CAMS medication treatment condition; CBT tx = CAMS therapy treatment condition; Gender: 0 = Female, 1 = Male; Ethnicity: 0 = Non-Hispanic, 1 = Hispanic;

*** $p<.001$

** $p<.01$

* $p<.05$.

Table 5.

Logistic regression testing the impact of remission status and treatment condition on legal outcomes and education achievement

	Legal Outcomes					
	Arrest record			**Conviction record**		
	Odds Ratio	**95% CI**	***p* value**	**Odds Ratio**	**95% CI**	***p* value**
Remission Status	0.38	0.10, 1.39	0.14	0.45	0.06, 3.18	0.42
COMB tx	0.62	0.11, 3.36	0.58	0.48	0.05, 4.64	0.52
SRT tx	0.23	0.04, 1.40	0.11	0.07	0.00, 1.23	0.07
CBT tx	0.74	0.16, 3.39	0.7	0.07	0.00, 1.43	0.09
Sex	3.84	1.13, 13.03	<0.05	1.34	0.25, 7.28	0.74
SES	1.01	0.96, 1.06	0.84	1.02	0.94, 1.11	0.59
Ethnicity	11.02	1.99, 60.94	<0.01	16.16	0.76, 345.14	0.07
Baseline CGAS	1.05	0.95, 1.16	0.31	0.97	0.84, 1.13	0.73
Baseline CGI-S	1.14	0.42, 3.12	0.79	0.57	0.14, 2.37	0.44
Visit 1 CAMELS Age	1.31	1.10, 1.56	<0.01	1.25	0.98, 1.59	0.07
	Model $\chi^2 = 36.17$ $p < .001$			Model $\chi^2 = 25.99$, p <.05		
	Educational Achievement					
	High-School Graduate			Started College		
	Odds Ratio	95% CI	*p* value	Odds Ratio	95% CI	*p* value
Remission Status	1.34	0.21, 8.65	0.76	1.15	0.40, 3.27	0.8
COMB tx	0	0.00, 0.00	0.99	0.29	0.06, 1.47	0.13
SRT tx	0	0.00, 0.00	0.99	0.79	0.15, 4.09	0.78
CBT tx	0	0.00, 0.00	0.99	0.59	0.12, 2.91	0.52
Sex	0.34	0.04, 2.77	0.32	0.42	0.16, 1.08	0.07
SES	1.1	1.03, 1.18	<.01	1.06	1.01, 1.10	<.01
Ethnicity	1.29	0.11, 15.05	0.84	1.53	0.23, 10.32	0.66
Baseline CGAS	1.09	0.92, 1.29	0.35	0.97	0.89, 1.06	0.5
Baseline CGI-S	1.88	0.41, 8.59	0.41	0.52	0.21, 1.27	0.15
CAMELS Age	1.24	0.69, 2.21	0.47	1.23	0.90, 1.67	0.19
	Model $\chi^2 = 22.67$, $p = .09$			Model $\chi^2 = 25.08$, $p < .05$		

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, CGI-S = Clinical Global Impression-Severity, CGAS = Children's Global Assessment Scale, Gender: 0 = Female, 1 = Male, Ethnicity: 0 = Non-Hispanic, 1 = Hispanic.