Measures of cognition and coping in adolescents with anxiety disorder pre-and-post-cognitive behavioural therapy

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Abstract

Anxiety disorders (ADs) are functionally impairing and amongst the most common mental health disorders affecting adolescents in today's society [1], impacting an estimated 9-17% of adolescents overall[2-4]. From an evidence-based perspective, cognitive-behavioral therapy (CBT) is currently the treatment of choice for ADs in adolescents[5]. Despite extensive use of CBT in treating adolescents with AD and significant progress in CBT research highlighting its efficacy, mediators of its effectiveness in youth remain largely unexamined[6]. This study aims at exploring measures of cognition and coping in adolescents with ADs pre and post cognitive behavioural therapy, as a basis for further correlational and mediational research in the realm of CBT. The study population was comprised of 25 post-pubertal adolescents, aged 12-18, with Social Phobia (SP), Generalized Anxiety Disorder (GAD) and/or Separation Anxiety Disorder (SAD). Using an open-label treatment design, participants with AD received CBT for 16 weeks following the Kendall's C.A.T. program[7]. Clinical assessment was accomplished using the Anxiety Disorders Interview Schedule for DSM-IV, Research and Lifetime Versions (ADIS-RLV)[8] and the Pediatric Anxiety Rating Scale (PARS)[9], in order to obtain a composite diagnosis and severity score for each participant. Participants also completed self-report measures including the Childhood Anxiety Sensitivity Index (CASI)[8,10], the Negative Affect Self-Statement Questionnaire (NASSQ)[11] and the Response to Stress Questionnaire (RSQ)[12]. Analysis found statistically significant reduction in anxiety severity, as measured on the PARS, in patients following treatment with CBT. Patients also showed statistically significant improvement in cognition and coping strategies. Exploring the changes that take place in cognition and coping strategy over the course of CBT serves as a scaffolding for further investigation into correlations between such changes and treatment efficacy; a field of research that can aid in understanding why CBT results in clinical and therapeutic improvement amongst those receiving therapy, but also allow for the development of and improvement in CBT practices.

Introduction

The three most common anxiety disorders amongst adolescents, sometimes referred to collectively as the anxiety triad[13], are Generalized Anxiety Disorder (GAD), Social Phobia (SP) and Separation Anxiety Disorder (SAD). An estimated 60-65% of youth suffering from an Anxiety Disorder (AD) show a significant reduction in anxiety symptoms following treatment with cognitive behavioural therapy (CBT)[17]. At the basis of CBT is a recognition of how anxious individuals tend to overestimate danger as well as physical and social threat, and furthermore underestimate their ability to control outcomes and deal with threats[18]. Thus, CBT has as its foundation a variety of techniques aimed at teaching the use of cognitive-mediational strategies that guide behaviour and result in improved adaptation and adjustment[6]. CBT strives to modify maladaptive thinking and attitudes while increasing skill sets and changing behavioural patterns[19]. Typically 15 to 20 sessions long, the Coping Cat program for children, and the adapted form, C.A.T. for adolescents (Kendall, 1992), has been identified as one of the best recognized and evaluated CBT protocols for pediatric anxiety problems[18]. This being said, there is a strong case that can be made for research into the cognitive and coping strategy changes that take place over the course of CBT when treating adolescents with AD[6,17,18,20]. This study aims at exploring measures of cognition and coping in adolescents with an AD pre and post cognitive behavioural therapy, as a basis for further correlational and mediational research in the realm of CBT. By identifying the relationships that exist between changes that take place in coping strategies and cognition in adolescents diagnosed with AD and the efficacy of CBT in these individuals, one can gain valuable advantage in further developing CBT and other psychotherapy treatments for anxiety in order to maximize efficacy, improving treatment technique and better understanding patient populations that may not currently respond to treatment[17,20].

Methodology

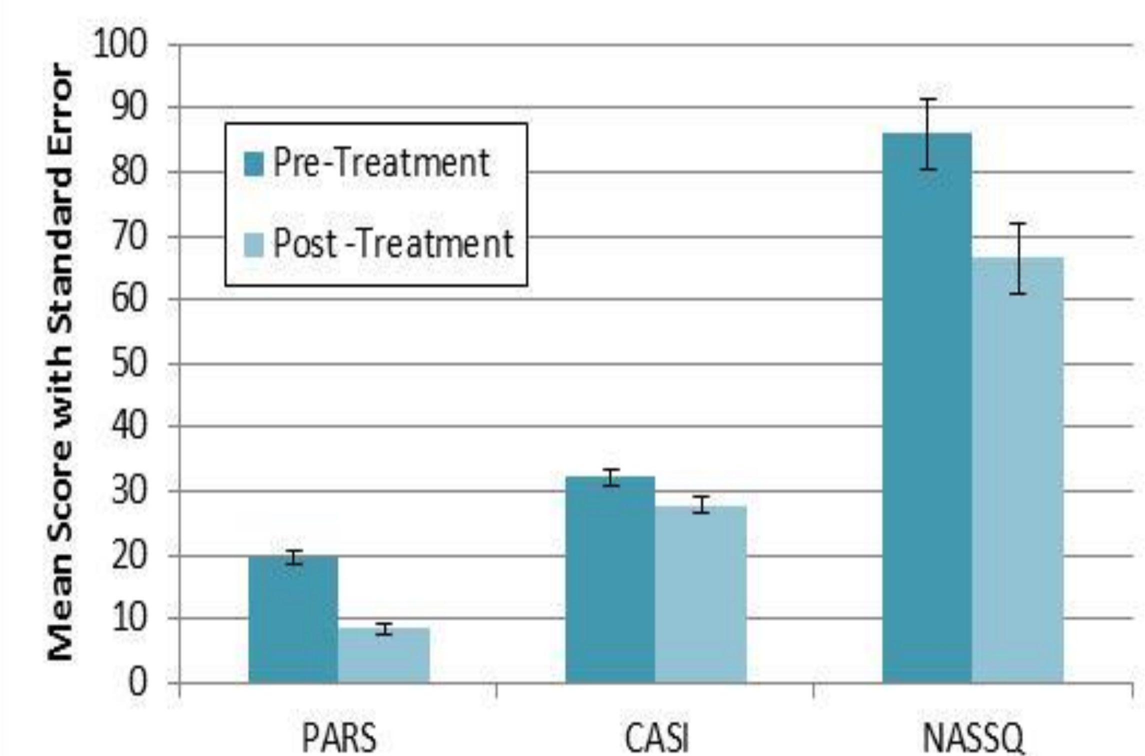
The study population was comprised of post-pubertal adolescents, aged 12-18, with Social Phobia (SP), Generalized Anxiety Disorder (GAD) and/or Separation Anxiety Disorder (SAD). A control group of post-pubertal adolescents individually matched to the clinical participants for sex and age (± 1 year) but with no personal or first-degree relative history of mental disorders was also recruited. First, the clinical and control participants were compared at baseline on a number of clinical and psychological measures, using a case-control design. Then, using an open-label treatment design, participants with AD received CBT for 16 weeks following the Kendall's C.A.T. program[7]. Clinical assessment was accomplished using the Anxiety Disorders Interview Schedule for DSM-IV, Research and Lifetime Versions (ADIS-RLV)[8] and the Pediatric Anxiety Rating Scale (PARS)[9], in order to obtain a composite diagnosis and severity score for each participant. Clinical and control participants also completed self-report measures including the Childhood Anxiety Sensitivity Index (CASI)[8,10] and the Negative Affect Self-Statement Questionnaire (NASSQ)[11], which are both cognitive measures, as well as the Response to Stress Questionnaire (RSQ)[12] which measures coping abilities. The CASI is a scale utilized for measuring anxiety sensitivity, such as belief that anxiety leads to catastrophic negative consequences, in a pediatric population[10]. The NASSQ is a 70-item scale designed to assess cognition associated with negative affect in children in adolescents[11]. Finally, the RSQ is aimed at exploring coping strategies as well as involuntary stress responses in youth[12]. Primary and Secondary Control Engagement are considered "adaptive" coping strategies, while Disengagement, Involuntary Engagement and Involuntary Disengagement are seen as "maladaptive". Participants in the study completed two additional self-report measures, the Beck Depression Inventory-II (BDI-II)[21] and the Multidimensional Anxiety Scale for Children (MASC)[22], as a means of further characterizing the unique psychological profile of each participant. Statistical analysis of results was accomplished using SPSS software.

Results

25 patients were enrolled in the study who met full diagnostic criteria for an AD as a primary diagnosis according to the Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition (Text Revised). In addition to the dichotomous diagnostic value of the ADIS in differentiating between patients and controls clinically, study participants in both groups were also compared on a number of measures assessing for cognition, mood, and coping strategies.

Independent samples t-tests were performed to compare baseline scores between clinical and control participants on BDI-II, MASC, CASI, and NASSQ measures. Results revealed significantly higher scores in the clinical group as compared to the control group not only for anxiety symptoms (MASC, $t(109) = 9.477.31$, $p < .001$) but also for depressive symptoms (BDI, $t(57) = 3.77$, $p < .001$), negative self-talk (NASSQ, $t(110)= 8.066$, $p< 0.01$), and anxiety sensitivity (CASI, $t(100) = 7.94$, $p < .001$).

Subsequently, paired samples t-tests were performed to compare clinical participant's scores from pre- to post-treatment on the following measures: PARS, NASSQ, CASI, MASC, and RSQ. All clinical and cognitive measures changed significantly from pre-to post-treatment. Scores on the PARS, $t(23) = 11.97$, $p < .001$, CASI, $t(24) = 3.40$, $p = .002$, NASSQ, $t(28) = 3.57$, $p = .001$, all decreased significantly. Scores on the RSQ changed where use of Primary, $t(20) = -1.02$, $p = 0.322$, and Secondary, $t(20) = -1.97$, $p = .062$, Control Engagement increased, and use of Disengagement, $t(20) = 4.72$, $p < .001$, Involuntary Engagement, $t(20) = 2.26$, $p = .035$, and Involuntary Disengagement, $t(20) = 3.059$, $p =.006$, decreased.



Mean Scores for CASI, BDI, MASC and NASSQ measures for both control and pre-treatment patient populations

Mean Scores with Standard Error

Control Population
Patient Population

CASI BDI MASC NASSQ

Discussion, Conclusions & Future Steps

It is clear that the control and patient populations of this study differed significantly on a number of measures (CASI, NASSQ, BDI and MASC), capturing the higher prevalence of anxiety, and associated dysfunctional cognitive processing in the patient group. Changes in the clinical group from pre-to post-treatment indicated that the CBT treatment that was used in order to alleviate anxiety symptoms in the patient population of the study was effective in reducing clinical symptoms as well as producing significant changes in cognition. In addition to changes in cognition, amelioration in coping strategies was also seen in the clinical group; this is shown by an overall increase in the scores for RSQ subscales related to adaptive coping strategies and an overall decrease in scores for RSQ subscales related to maladaptive and dysfunctional coping strategies. Future direction for this project is to explore the correlations that may exist between cognitive changes and therapeutic improvement of anxiety in adolescents through CBT, as well as the possible correlations between said improvement and a better balance of coping strategies. By gaining a better grasp of the dynamics of change that takes place over the course of CBT in adolescents with anxiety, one is hopeful of improving the mental health and wellbeing of this population.

References

1. Rockhill C, Kodish I, DiBattisto C, Macias M, Varley C, Ryan S. Anxiety disorders in children and adolescents. *Current Problems in Pediatric and Adolescent Health Care*. 2010;40(4):66-99.
2. Copeland W, Shanahan L, Costello EJ, Angold A. Cumulative prevalence of psychiatric disorders by young adulthood: A prospective cohort analysis from the great smoky mountains study. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2011;50(3):252-261.
3. Costello EJ, Egger H, Angold A. 10-year research update review: The epidemiology of child and adolescent psychiatric disorders: I. methods and public health burden. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2005;44(10):972-986.
4. Costello E, Angold A, Burns BJ,et al. The great smoky mountains study of youth: Goals, design, methods, and the prevalence of dsm-iii-r disorders. *Archives of General Psychiatry*. 1996;53(12):1129-1136.
5. In-Albon T, Schneider S. Psychotherapy of childhood anxiety disorders: A meta-analysis. *Psychother Psychosom*. 2007;76(1):15-24.
6. Prins PJM, Ollendick TH. Cognitive change and enhanced coping: Missing mediational links in cognitive behavior therapy with anxiety-disordered children. *Clin Child Fam Psychol Rev*. 2003;6(2):87-105.
7. Kendall PC, Choudhury MS, Hudson J, Webb A. *The C.A.T. project manual for the cognitive-behavioral treatment of anxious adoelscents*. Ardmore, PA: Workbook Publishing; 2002.
8. SILVERMAN WK, SAAVEDRA LM, PINA AA. Test-retest reliability of anxiety symptoms and diagnoses with the anxiety disorders interview schedule for DSM-IV: Child and parent versions. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2001;40(8):937-944.
9. THE RESEARCH UNITS ON PEDIATRIC PSYCHOPHARMACOLOGY ANXIETY STUDY GROUP,. The pediatric anxiety rating scale (PARS): Development and psychometric properties. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2002;41(9):1061-1069.
10. Silverman WK, Fleisig W, Rabian B, Peterson RA. Childhood anxiety sensitivity index. *J Clin Child Psychol*. 1991;20(2):162.
11. Ronan K, Kendall P, Rowe M. Negative affectivity in children: Development and validation of a self-statement questionnaire. *Cogn Ther Res*. 1994;18(6):509-528.
12. Connor-Smith JK, Compas BE, Wadsworth ME, Thomsen AH, Saltzman H. Responses to stress in adolescence: Measurement of coping and involuntary stress responses. *J Consult Clin Psychol*. 2000;68(6):976-992.
13. Jablonka O, Sarubbi A, Rapp AM, Albano AM. Cognitive behavior therapy for the anxiety triad. *Child Adolesc Psychiatr Clin N Am*. 2012;21(3):541-553.
14. Masi G, Millepiedi S, Mucci M, Poli P, Bertini N, Milantoni L. Generalized anxiety disorder in referred children and adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*. 2004;43(6):752-760.
15. Lang AJ, Stein MB. Social phobia: Prevalence and diagnostic threshold. *J Clin Psychiatry*. 2001;62 Suppl 1:5-10.
16. Masi G, Mucci M, Millepiedi S. Separation anxiety disorder in children and adolescents: Epidemiology, diagnosis and management. *CNS Drugs*. 2001;15(2):93-104.
17. Kendall PC, Settipani CA, Cummings CM. No need to worry: The promising future of child anxiety research. *Journal of Clinical Child & Adolescent Psychology*. 2012;41(1):103-115.
18. Lau W, Chan CK, Li JC, Au TK. Effectiveness of group cognitive-behavioral treatment for childhood anxiety in community clinics. *Behav Res Ther*. 2010;48(11):1067-1077.
19. Chu BC, Harrison TL. Disorder-specific effects of CBT for anxious and depressed youth: A meta-analysis of candidate mediators of change. *Clin Child Fam Psychol Rev*. 2007;10(4):352-372.
20. Chu BC, Harrison TL. Disorder-specific effects of CBT for anxious and depressed youth: A meta-analysis of candidate mediators of change. *Clinical Child & Family Psychology Review*. 2007;10(4):352-372.
21. BECK AT, WARD CH, MENDELSON M, MOCK J, ERBAUGH J. An inventory for measuring depression. *Arch Gen Psychiatry*. 1961;4:561-571.
22. MARCH JS, PARKER JDA, SULLIVAN K, STALLINGS P, CONNERS CK. The multidimensional anxiety scale for children (MASC): Factor structure, reliability, and validity. *Journal of the American Academy of Child & Adolescent Psychiatry*. 1997;36(4):554-565.

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