Activating and Connecting Teens (ACT) Study

NCT03438656

03/01/2021

ACT Study Protocol and Statistical Analysis Plan

Childhood maltreatment is common[1,2] and has been linked to a multitude of negative outcomes, including psychiatric and functional impairments that persist across the lifespan.[2–4] Exposure to physical, sexual, or emotional abuse or neglect is associated with markedly elevated risk for depression[5] with epidemiological studies indicating that these forms of childhood maltreatment (CM) account for as much as 30% of depression onsets in the population[2,6] and predict a more chronic and severe course of depression.[7] Currently cognitive behavioral therapy and antidepressant medication is recommended as best practice for treatment of depression.[8] However, depressed individuals who have experienced CM show poor treatment response and high risk for relapse across interventions,[7,9–11] and **alternative treatments have not been investigated**.

A history of CM exposure may increase risk for depression via altered neurodevelopment of the **positive valence system** (i.e., reward processing).[12] Given the reward processing deficits observed among depressed youth with a history of CM exposure, depression outcomes may be improved by investigating interventions that specifically target disruptions in reward circuitry and behaviors.

Behavioral Activation (BA) is an evidence-based treatment for adult and adolescent depression[13–15] that uses an individualized approach to identify and foster behaviors within an adolescent's context that increase rewarding experiences and decrease avoidant behaviors that contribute to depression symptom severity and maintenance. **This is the first study to investigate BA as an alternative, target-focused approach to treat depression among adolescents with a history of CM exposure.**

This proposal will examine whether BA intervention reduces depression and anhedonia in a sample of depressed adolescents, aged 13-18, with variable histories of CM exposure (**BA Group**). A total of 30 depressed adolescents will be recruited to undergo a 12-week course of BA. All participants will undergo clinical assessment to measure depression symptoms and anhedonia at baseline (Week 0) and post- (Week 12) treatment.

Participant Table	Inclusion Criteria	Exclusion Criteria
BA Group n=30	1) Age 13-18; 2) major or minor depression (PHQ ≥10).	1) IQ<80; 2) non-English speaking; 3) current PTSD; 4) developmental, neurological, psychosis, bipolar, or substance disorder; 5) No legal guardian; 6) current psychiatric medication; 7) suicidality requiring higher level of care.

Study Aims:

Aim 1: Determine baseline and post-BA treatment depression and anhedonia symptoms among depressed adolescents with variable histories of CM.

Exploratory Aim: Evaluate whether changes in self-reported anhedonia or other indicators of reward processing as measured by daily ecological momentary assessment and self-report are differentially associated with reductions in depression following BA in youth with versus without CM exposure.

Data Analyses: Across all analyses: *primary outcomes* will be measured as 1) depression and anhedonia symptoms. **Aim 1. Determine baseline and post-BA treatment depression and anhedonia symptoms among depressed adolescents with variable histories of CM.** Means and standard deviations in depression (PHQ-9) and anhedonia symptoms (BADS) will be measured at baseline and post-treatment follow-up.

Exploratory aim. Evaluate whether changes in self-reported anhedonia or other indicators of reward processing are differentially associated with reductions in depression following BA in youth with versus without CM exposure. Participants completed morning, afternoon, and evening EMA surveys twice a week over 14 weeks (n= 84 timepoints). Measures assessed depression symptoms, CM exposure, and reward processing/responsiveness across BA treatment. Using the *lavaan* package in R[8], we plan to conduct Latent Growth Modeling (LGM) to test the associations between changes in reward processing and depression symptoms with CM as a fixed moderator. Covariates will include age, sex, and socioeconomic status.

References

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