

BIOGRAPHICAL SKETCH

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NAME: **Webb, Christian A. Ph.D.**

eRA COMMONS USER NAME: CWEBB1

POSITION TITLE: Assistant Professor, Harvard Medical School
Director, Treatment and Etiology of Depression in Youth Laboratory, McLean Hospital

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
McGill University, Montreal, QC	BA	5/05	Psychology & Philosophy
Vanderbilt University, Nashville, TN	n/a	n/a	Clinical Psychology
University of Pennsylvania, Philadelphia, PA	MA	5/08	Clinical Psychology
University of Pennsylvania, Philadelphia, PA	PhD	8/12	Clinical Psychology
McLean Hospital/Harvard Medical School	Postdoctoral	2012-2015	Affective Neuroscience

A. Personal Statement

My long-term goal as an academic scholar is to further our understanding of the psychosocial and neurobiological mechanisms underlying symptom improvement in psychotherapeutic and pharmacological interventions for depression. To date, my research has focused primarily on elucidating the processes of depressive symptom improvement within cognitive behavioral approaches to treating depression. There is a large body of treatment outcome research attesting to the efficacy of cognitive behavioral therapy (CBT). However, the mechanisms through which patients improve – and why many fail to sufficiently improve – remain largely unknown. A clearer understanding of the “active ingredients” of treatment and underlying mechanisms of symptom change may ultimately inform the development of more targeted – and ideally more effective and efficient – treatments for depression. In addition, and relevant to the pursuit of personalized medicine in psychiatry, my more recent research is aimed at trying to identify pretreatment predictors of symptom improvement in psychotherapeutic and pharmacological treatments for depression. Greater knowledge of variables predicting better or worse treatment response *prior* to the start of treatment may have important clinical implications regarding which interventions are best suited for whom, thus informing treatment selection. To date, we have strikingly little empirical data to usefully guide the selection of treatments for depressed individuals. Within my postdoctoral research, funded by an NIMH F32 *National Research Service Award*, I incorporated assessments of electrophysiological processes (e.g., event-related potentials [ERPs] to reward-related stimuli assessed via EEG) into a clinical trial of CBT for depressed adolescents. The project integrated neural (EEG/ERP) and psychosocial (e.g., acquisition of emotion regulation skills) variables in an effort to more reliably predict treatment response. Currently, I am Principal Investigator on a project utilizing a multimodal assessment of reward system dysfunction (fMRI, a behavioral reward learning paradigm, and Ecological Momentary Assessment) in an effort to prospectively predict the onset of depression in adolescents. The latter project is funded by the *Klingenstein Foundation* and a *NARSAD Young Investigator Award*. I also as PI on a *Partners Innovation Discovery Grant* study aimed at using machine learning approaches to predict optimal treatment assignment for depressed patients. Finally, through an NIMH *Career Development (K23) Award*, I launched a study examining reward-related predictors and mechanisms of symptom improvement among anhedonic adolescents receiving Behavioral Activation (BA) therapy.

B. Positions and Honors

Positions and Employment

2005-2006	Research Assistant, Department of Psychology, McGill University, Montreal, QC
2007-2012	Graduate Student, University of Pennsylvania, Philadelphia, PA
2011-2012	Clinical Fellow, Harvard Medical School, Boston, MA
2012-2015	Postdoctoral Research Fellow, McLean Hospital & Harvard Medical School, Boston, MA
2015-2016	Instructor, Harvard Medical School, Boston, MA
2015-2016	Assistant Neuroscientist, McLean Hospital, Belmont, MA
2016-	Associate Neuroscientist, McLean Hospital, Belmont, MA
2016-	Assistant Professor, Harvard Medical School, Boston, MA
2018-	Director, Treatment and Etiology of Depression in Youth Laboratory, McLean Hospital, Belmont, MA

Honors

2004	Dow-Hickson Scholarship, McGill University
2004	J. W. McConnell Award, McGill University
2004	Dean's Honor List, McGill University
2005	Ken Bowers Student Research Award, Canadian Psychological Association
2005	Sigma Xi Excellence in Undergraduate Research Award
2005	Inducted into Sigma Xi Scientific Research Society
2005	First prize in Health Sciences, Invitation-Only McGill Undergraduate Research Conference
2005	Certificate of Academic Excellence, Canadian Psychological Association
2005	Inducted into Golden Key International Honor Society
2006	Peabody Dean's Fellowship, Vanderbilt University
2006-2007	University Graduate Fellowship, Vanderbilt University
2006-2007	Peabody Graduate Honor Scholarship, Vanderbilt University
2006-2008	Masters Fellowship, Fonds de la Recherche en Santé du Québec
2007-2010	Benjamin Franklin Fellowship, University of Pennsylvania
2010	Beck Institute Scholarship
2011	Leonard Krasner Student Dissertation Award, Association for Behavioral and Cognitive Therapies
2013	Event-Related Potential (ERP) Bootcamp Scholarship, University of California, Davis - Center for Mind & Brain
2014	Travel Award, American College of Neuropsychopharmacology (ACNP)
2014	Child Intervention, Prevention & Services (CHIPS) Fellowship, NIMH
2015	Travel Award, University of Wisconsin Symposium on Emotion
2015	Travel Award, Anxiety and Depression Association of America (ADAA)
2015	Career Development Leadership Program Fellowship, ADAA
2016	Early Career Award, APA, Division 29 (Society for the Advancement of Psychotherapy)
2016	Alfred Pope Young Investigator Award, McLean Hospital
2017	Travel Award, Society of Biological Psychiatry (SOBP)
2017	President's New Researcher Award, Association for Behavioral and Cognitive Therapies

C. Contribution to Science (Selected from 37 peer-reviewed publications; 4 book chapters; 1 book)

1. A core assumption of empirically-supported, manualized forms of psychotherapy, including CBT, is that the greater therapists *adhere* to the treatment protocol, the more benefit, on average, patients should experience. Surprisingly, prior to the below publication (a), no systematic review had been conducted to test the extent to which greater levels of therapist adherence to treatment protocols predicts better treatment outcomes. Thus, as a logical first step in my research program, I conducted a comprehensive meta-analytic review, which examined the role of treatment adherence (across any psychotherapeutic modality) in predicting patient symptom improvement (across any mental disorder). Informed by this initial meta-analysis, I have conducted a series of studies examining the role of therapist adherence to, and competence in, CBT techniques in predicting depressive symptom change. In addition, I have investigated the therapeutic role of patient acquisition and use of various cognitive and behavioral skills, as well as the contribution of placebo processes in accounting for depressive symptom improvement.

- a. **Webb, C.A.**, DeRubeis, R.J., & Barber, J.P. (2010). Therapist adherence/competence and treatment outcome: A meta-analytic review. Journal of Consulting and Clinical Psychology, 78, 200-211.
 - b. **Webb, C.A.**, DeRubeis, R.J., Dimidjian, S., Hollon, S.D., Amsterdam, J.D. & Shelton, R.C. (2012). Predictors of patient cognitive therapy skills and symptom change in two randomized clinical trials: The role of therapist adherence and the therapeutic alliance. Journal of Consulting and Clinical Psychology, 80, 373-381.
 - c. **Webb, C.A.**, Kertz, S., J., Bigda-Peyton, J.S., & Björgvinsson, T. (2013). The role of pretreatment expectancies and cognitive-behavioral skills in symptom improvement in an acute psychiatric setting. Journal of Affective Disorders, 149, 375-382
 - d. **Webb, C.A.**, Beard, C., Kertz, S.J., Hsu, K. & Björgvinsson, T. (2016). Differential role of CBT skills, DBT skills and psychological flexibility in predicting depressive versus anxiety symptom improvement. Behaviour Research and Therapy, 81, 12-20.
2. Relevant to the pursuit of personalized medicine in psychiatry, my more recent work has aimed to identify pretreatment predictors of symptom improvement in psychotherapeutic and pharmacological interventions for depression. Greater knowledge of variables predicting better or worse treatment response *prior* to the start of treatment may have important clinical implications regarding which interventions are best suited for whom, thus informing treatment selection. To date, we have strikingly little empirical data to usefully guide the selection of treatments for depressed individuals. In current clinical practice, treatment selection for depressed individuals is largely based on trial-and-error and clinician/patient preference. Rates of non-response to first line depression treatment in primary care are high (~ 70%), resulting in protracted depressive episodes until an adequate treatment is found. Consistent with the goals of precision medicine, the more recent work of my colleagues and I is aimed at developing actionable, algorithm-guided treatment recommendations to improve outcomes for depressed individuals by matching them to the optimal intervention.
- a. Pizzagalli, D.A.*, **Webb, C.A.***, Dillon, D.G., Tenke, C.E., Kayser, J., Goer, F., Fava, M., McGrath, P., Weissman, M., Parsey, R., Adams, P., Trombello, J., Cooper, C., Deldin, P., Oquendo, M.A., McInnis, M.G., Carmody, T., Bruder, G., Trivedi, M.H. (2018). Pretreatment rostral anterior cingulate cortex theta activity in relation to symptom improvement in depression: A randomized clinical trial. JAMA Psychiatry, 75, 547-554. [*Contributed equally].
 - b. **Webb, C.A.**, Olson E.A., Killgore W.D.S., Pizzagalli, D.A., Rauch S.L. & Rosso I.M. (2018). Rostral anterior cingulate cortex morphology predicts treatment response to internet-based CBT for depression. Biological Psychiatry: Cognitive Neuroscience and Neuroimaging, 3, 255-262.
 - c. **Webb, C. A.**, Trivedi, M.D., Cohen, Z. D, Dillon, D. G., Fournier, J.C., Goer, F., Fava, M. McGrath, P. J., Weissman M., Parsey, R., Adams, P., Trombello, J. M., Cooper, C., Deldin, P., Oquendo, M. A., McInnis, M.G., Huys, Q., Bruder, G., Kurian B., Jha, M., DeRubeis, R. J., and Pizzagalli D. A. (in press). Personalized prediction of antidepressant versus placebo response: Evidence from the EMBARC study. Psychological Medicine.
3. In addition to my depression treatment research program, I have conducted research investigating the etiology and pathophysiology of depression in adults and youth. A clearer understanding of factors that cause and maintain depressive symptoms can ultimately help inform and improve interventions aimed at treating and preventing depression. The NIMH Research Domain Criteria (RDoC) initiative has highlighted the need for research focusing on fundamental dimensions of behavior that cut across traditional diagnostic categories. Accordingly, and in an effort to parse the heterogeneity and etiological/pathophysiological complexity of MDD, my research in this area has focused on relatively less complex intermediate (endo)phenotypes that map more reliably unto underlying neurobiology. Specifically, I have examined behavioral endophenotypes probing central domains specified in the RDoC matrix, including *negative valence* (e.g., neuroticism), *positive valence* (e.g., reward learning), and *cognitive* (cognitive control) systems. Such research may ultimately inform efforts to empirically derive meaningful depression subtypes, as well as suggest treatment targets.
- a. **Webb, C.A.**, Dillon, D.G., Pechtel, P., Goer, F., Murray, M., Huys, Q.J., Fava, M., McGrath, P., Weissman, M., Parsey R., Kurian, B., Adams, P., Weyandt, S., Trombello, J., Grannemann, B., Cooper, C., Deldin, P., Tenke, C., Trivedi, M., Bruder, G., & Pizzagalli, D.A. (2016). Neural

Summary: The goal of this experimental therapeutics trial is to validate Behavioral Activation Treatment for Anhedonia in a transdiagnostic sample of anhedonic patients first with 7T fMRI and then with a randomized clinical trial.

Role: Consultant

1K23MH108752-01

Webb (PI)

9/1/15 – 8/31/19

NIH/NIMH

Title: Examining Reward-Related Predictors and Mechanisms of Change in BA Treatment for Anhedonic Adolescents

Summary: The study investigates neural and behavioral reward-related pretreatment predictors and mechanisms of symptom improvement in Behavioral Activation (BA) therapy for anhedonic adolescents.

Role: Principal Investigator

NARSAD Young Investigator Award

Webb (PI)

1/15/16-1/14/19

Brain & Behavioral Research Foundation

Title: Predicting Future Depressive Symptoms in Adolescents: A Multi-Modal Approach

Summary: The project examines neural and behavioral reward-related predictors of depression onset in adolescents over the course of a 2-year longitudinal design.

Role: Principal Investigator

Past Research Support

Adolescent Depression Fellowship

Webb (PI)

7/1/15-12/31/17

Klingenstein Third Generation Foundation

Title: Towards Reward-Related Biomarkers of Adolescent Depression Vulnerability

Summary: The goal of this project is to utilize fMRI, a behavioral reward task and Ecological Momentary Assessment to predict the onset of depressive symptoms in at-risk adolescents.

Role: Principal Investigator

Adam Corneel Young Investigator Award Webb (PI)

7/1/15-6/30/16

McLean Hospital/Harvard Medical School

Title: Predicting Future Depressive Symptoms in Adolescents: A Multi-Modal Approach

Summary: The goal of this project is to utilize fMRI, a behavioral reward task and Ecological Momentary Assessment to predict the onset of depressive symptoms in youth.

Role: Principal Investigator

W81XWH-12-1-0109

Killgore, Rauch, Pizzagalli (Co-PI) 9/1/11-2/28/16

Department of Defense

Title: Internet-Based Cognitive Behavioral Therapy: Effects on Depressive Cognitions and Brain Function

Summary: The goal of the project is to demonstrate the effectiveness of iCBT at reducing depressive symptoms and dysfunctional patterns of thinking as well as to foster increased resilience and coping in adults. Additionally, the project seeks to delineate changes in brain activation patterns that occur during treatment.

Role: Co-Investigator

F32MH099801-01

Webb (PI)

2/1/13 – 9/24/15

NIH/NIMH

Title: Investigating Neural and Psychotherapeutic Mediators of Placebo Response in MDD

Summary: The study examines several plausible neural (i.e., event-related potentials [ERPs] assessed via electroencephalography [EEG]) and psychotherapeutic (e.g. acquisition and use of emotion-regulation skills) mediators of symptom improvement in CBT for depressed adolescents.

Role: Principal Investigator

752-2006-0282

Webb (PI)

9/1/06 - 8/31/10

Social Sciences and Humanities Research Council of Canada

Title: Processes of Symptom Change in CBT for Depression

Summary: This 4-year predoctoral fellowship provided support for the candidate's PhD research program

investigating psychotherapeutic mediators of depressive symptom improvement in CBT.
Role: Principal Investigator