

BIOGRAPHICAL SKETCH

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NAME: Brent J. Small, PhD

eRA COMMONS USER NAME (credential, e.g., agency login): bsmall

POSITION TITLE: Professor & Director

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
University of Toronto, Toronto, ON, Canada	BSc	06/1988	Biology/Psychology
University of Victoria, Victoria, BC, Canada	MA	05/1992	Life-Span Psychology
University of Victoria, Victoria, BC, Canada	PhD	05/1995	Life-Span Psychology
Karolinska Institute, Stockholm, Sweden	Post-doc	07/1997	Psychology

A. Personal Statement

Dr. Small is Professor in the School of Aging Studies at the University of South Florida (USF), a Senior Member in the Health Behaviors and Outcomes program, and the Biostatistics Resource Core at the H. Lee Moffitt Cancer Center and Research Institute. Dr. Small also holds courtesy joint appointments in USF's Department of Psychology and College of Nursing. Dr. Small's applied statistics research has focused on the use of advanced statistical analytic techniques, especially the application of advanced multivariate and multivariable statistical techniques to longitudinal data. These include the use of multilevel models, growth mixture models and structural equation models and mediation and moderation in regression. Dr. Small's has a long track record of NIH funding as a statistician which includes his role as the study statistician on over 20 NIH grants, director of the statistical core for completed P01 grant, a member of the statistical core for the Florida Alzheimer's Disease Research Center, and finally as the statistician member of Data Safety and Monitoring Boards on other trials. Dr. Small's empirical research has focused broadly on changes in cognitive performance, but specifically among persons undergoing treatment for cancer, cancer survivors, as well as older adults and those at risk of late-life dementing disorders. His research has also focused on the role of cognitive reserve and lifestyle activities on the maintenance of cognitive functioning in late life.

1. Reblin M, **Small B**, Jim H, Weimer J, Sherwood P. Mediating burden and stress over time: caregivers of patients with primary brain tumor. *Psychooncology*. 2018;27(2):607-12. doi: 10.1002/pon.4527. PMID: 28801927.
2. Salloum A, **Small BJ**, Robst J, Scheeringa MS, Cohen JA, Storch EA. Stepped and standard care for childhood trauma. *Res Social Work Prac*. 2015;27(6):653-63. doi: 10.1177/1049731515601898.
3. Storch EA, **Small BJ**, McGuire JF, Murphy TK, Wilhelm S, Geller DA. Quality of life in children and youth with obsessive-compulsive disorder. *J Child Adolesc Psychopharmacol*. 2018;28(2):104-10. doi: 10.1089/cap.2017.0091. PMID: PMC5831750.
4. Storch EA, Wilhelm S, Sprich S, Henin A, Micco J, **Small BJ**, McGuire J, Mutch PJ, Lewin AB, Murphy TK, Geller DA. Efficacy of augmentation of cognitive behavior therapy with weight-adjusted d-Cycloserine vs placebo in pediatric obsessive-compulsive disorder: a randomized clinical trial. *JAMA Psychiatry*. 2016;73(8):779-88, 2016. doi: 10.1001/jamapsychiatry.2016.1128. PMID: PMC5734635.

B. Positions and Honors

Positions and Employment

1995-1997	Research Scientist, Division of Geriatric Epidemiology, Karolinska Institute, Stockholm, Sweden
1997-2002	Assistant Professor, School of Aging Studies, University of South Florida, Tampa
2004-2008	Associate Professor, Biostatistics Core, H. Lee Moffitt Cancer Center & Research Institute, University of South Florida, Tampa
2002-2008	Courtesy Joint Associate Professor, Department of Psychology, College of Arts & Sciences, and College of Nursing, University of South Florida, Tampa
2002-2008	Associate Professor, School of Aging Studies, University of South Florida, Tampa
2015-2018	Director, School of Aging Studies, College of Behavioral & Community Sciences, University of South Florida, Tampa
2008-present	Professor, School of Aging Studies, College of Behavioral & Community Sciences, University of South Florida, Tampa
2008-present	Professor, Biostatistics Core and Health Outcomes and Behavior Program, H. Lee Moffitt Cancer Center & Research Institute, University of South Florida, Tampa
2008-present	Courtesy Joint Professor, Department of Psychology, College of Arts & Sciences, and College of Nursing, University of South Florida, Tampa

Other Experience and Professional Memberships

2003-present	Editorial Board Member, <i>Psychology and Aging</i>
2004-present	Editorial Board Member, <i>Aging, Neuropsychology, and Cognition</i>
2006-present	Editorial Board Member, <i>Journal of Gerontology: Psychological Sciences</i>
2014-present	Editorial Board Member, <i>Gerontology</i>
2014-present	Editorial Board Member, <i>Neuro-Oncology Practice</i>
2017-present	Editorial Board Member, <i>Journal of Experimental Psychology: General</i>
2007-2015	Member, NIA-S Study Section, National Institutes of Health

Honors/Awards

2001	Outstanding Undergraduate Teaching Award, University of South Florida, Tampa
2002	President's Award for Faculty Excellence, University of South Florida, Tampa
2003	Fellow, Behavioral and Social Sciences Section, Gerontological Society of America
2004	Fellow, Division 20 (Adult Development and Aging), American Psychological Association
2004	The Margret M. Baltes Early Investigator Award in Behavioral and Social Gerontology, Gerontological Society of America
2005	Outstanding Faculty Research Achievement Award, University of South Florida, Tampa
2011	Fellow, Association for Psychological Science
2012	Outstanding Faculty Research Achievement Award, University of South Florida, Tampa

C. Contributions to Science

1. **Multivariate and Multivariable Methods Applied to Longitudinal Data.** My work has necessitated the application of sophisticated multivariate and multivariable methods to longitudinal data. The types of analyses that I have employed in my research include multilevel modeling, growth mixture modeling, mediation and moderation analyses, as well as bivariate dual change score models. For example, I have collaborated with Dr. Salloum on her previous work using stepped care trauma-focused cognitive behavioral therapy and applied multilevel models to outcomes from this study (Salloum et al., 2015). In addition, in my previous work with Dr. Storch we used multilevel models to examine longitudinal changes in a clinical trial among children with Obsessive Compulsive Disorder (Storch et al., 2016). In my own work, I employed piecewise random effects models to describe age-related changes in cognitive performance among older adults (Small et al., 2011). The results of this paper showed relatively stability of cognitive performance before age 75, but then rapid declines thereafter. I have used growth mixture modeling to evaluate whether subgroups existed based upon changes in depressive symptoms (Donovan et al., 2014) following the end of treatment for cancer.

- a. Donovan KA, Gonzalez BD, **Small BJ**, Andrykowski MA, Jacobsen PB. Depressive symptom trajectories during and after adjuvant treatment for breast cancer. *Ann Behav Med.* 2014;47(3):292-302. doi: 10.1007/s12160-013-9550-2. PMID: PMC4313122.
- b. Salloum A, **Small BJ**, Robst J, Scheeringa MS, Cohen JA, Storch EA. Stepped and standard care for childhood trauma. *Res Social Work Prac.* 2015;27(6):653-63. doi: 10.1177/1049731515601898.
- c. **Small BJ**, Dixon RA, McArdle JJ. Tracking cognition-health changes from 55 to 95 years of age. *J Gerontol B Psychol Sci Soc Sci.* 2011;66(Suppl 1):i153-61. doi: 10.1093/geronb/gbq093. PMID: PMC3132770.
- d. Storch EA, Wilhelm S, Sprich S, Henin A, Micco J, **Small BJ**, McGuire J, Mutch PJ, Lewin AB, Murphy TK, Geller DA. Efficacy of augmentation of cognitive behavior therapy with weight-adjusted d-Cycloserine vs placebo in pediatric obsessive-compulsive disorder: a randomized clinical trial. *JAMA Psychiatry.* 2016;73(8):779-88, 2016. doi: 10.1001/jamapsychiatry.2016.1128. PMID: PMC5734635.

2. **Cognitive Outcomes Following Treatment for Cancer.** My work has often focused on the negative cognitive outcomes cancer survivors and includes empirical work and meta-analytic summaries. For example, we examined whether the Catechol-O-Methyltransferase (COMT) genetic polymorphism was associated with poorer cognitive performance among breast cancer survivors and healthy controls (Small et al., 2011). Our work indicated that persons who possessed the COMT-val allele and were treated with chemotherapy exhibited selective impairments on tasks related to attention and executive functioning, abilities associated with frontal lobe functioning. This work highlighted the importance of the neurotransmitter Dopamine as the neural basis of cognitive deficits among cancer survivors. We have also conducted a meta-analysis on cognitive deficits among breast cancer survivors and reported small, but statistically significant impairments in several areas of functioning (Jim et al., 2012). Among prostate cancer survivors, men who received treatment with androgen deprivation therapy performance more poorly on tests of visuospatial ability (McGinty et al., 2014). Finally, a recent review highlighted the susceptibility of older adults to the negative consequences of cancer treatment on cognitive functioning and integrates my work in oncology, as well as in cognitive aging (Small et al., 2015).

- a. Jim HS, Phillips KM, Chait S, Faul LA, Popa MA, Lee YH, Hussin MG, Jacobsen PB, **Small BJ**. Meta-analysis of cognitive functioning in breast cancer survivors previously treated with standard-dose chemotherapy. *J Clin Oncol.* 2012;30(29):3578-87. doi: 10.1200/JCO.2011.39.5640. PMID: PMC3462044.
- b. McGinty HL, Phillips KM, Jim HS, Cessna JM, Asvat Y, Cases MG, **Small BJ**, Jacobsen PB. Cognitive functioning in men receiving androgen deprivation therapy for prostate cancer: a systematic review and meta-analysis. *Support Care Cancer.* 2014;22(8):2271-80. doi: 10.1007/s00520-014-2285-1. PMID: PMC4090762.
- c. **Small BJ**, Rawson KS, Walsh E, Jim HS, Hughes TF, Iser L, Andrykowski MA, Jacobsen PB. Catechol-O-methyltransferase genotype modulates cancer treatment-related cognitive deficits in breast cancer survivors. *Cancer.* 2011;117(7):1369-76. doi: 10.1002/cncr.25685. PMID: 21425136.
- d. **Small BJ**, Scott SB, Jim HS, Jacobsen PB. Is cancer a risk factor for cognitive decline in late life? *Gerontology.* 2015;61(6):561-6. doi: 10.1159/000381022. PMID: 25833334.

3. **Cognitive Aging and Alzheimer's disease.** Much of my work has been directed towards understanding changes in the cognitive performance of older adults, as well as persons who will go on to develop Alzheimer's disease (AD). Among older adults without AD, this work has centered on describing longitudinal changes in performance, as well as identifying factors that may accelerate declines and those that attenuate age-related impairments. For example, a number of my studies have focused on Apolipoprotein E (APOE) as a genetic risk factor for cognitive decline in older adults without dementia. Our work has shown that persons with the e4 allele of APOE are at greater risk for cognitive decrements, even in the absence of a dementia diagnosis (Small et al., 2004). We recently reported that persons with this risk factor also fail to benefit from cognitively enriching lifestyle activities, as compared to non-e4 carriers (Runge et al., 2014). In terms of protective factors, my work has focused on lifestyle activities (cognitive, social, physical) and dietary factors that may promote optimal cognitive health. We recently reported the results of a short-term clinical trial in which older adults randomized to a nutraceutical exhibited improvements on two measures of processing speed, relative to persons who took a placebo (Small et al., 2014). Finally, we (Snitz et al., 2015)

reported that increases in cognitive complaints were related to future declines in multiple domains of cognitive performance.

- a. *Runge SK, **Small BJ**, McFall GP, Dixon RA. APOE moderates the association between lifestyle activities and cognitive performance: evidence of genetic plasticity in aging. *J Int Neuropsychol Soc.* 2014;20(5):478-86. doi: 10.1017/S1355617714000356. PMID: 4096557.
- b. Snitz BE, **Small BJ**, Wang T, Chang CC, Hughes TF, Ganguli M. Do subjective memory complaints lead or follow objective cognitive change? A five-year population study of temporal influence. *J Int Neuropsychol Soc.* 2015;21(9):732-42. doi: 10.1017/S1355617715000922. PMID: PMC4615611.
- c. **Small BJ**, Rawson KS, Martin C, Eisel SL, Sanberg CD, McEvoy CL, Sanberg PR, Shytle RD, Tan J, Bickford PC. Nutraceutical intervention improves older adults' cognitive functioning. *Rejuvenation Res.* 2014;17(1):27-32. doi: 10.1089/rej.2013.1477. PMID: PMC4047846.
- d. **Small BJ**, Rosnick CB, Fratiglioni L, Backman L. Apolipoprotein E and cognitive performance: a meta-analysis. *Psychol Aging.* 2004;19(4):592-600. doi: 10.1037/0882-7974.19.4.592. PMID: 15584785.

Complete List of Published Work in MyBibliography:

<https://www.ncbi.nlm.nih.gov/myncbi/browse/collection/42197024/?sort=date&direction=descending>

D. Research Support

Ongoing Research Support

5R01AG008235-26

Dixon (PI)

09/01/2013 – 08/31/2019

NIH/NIA

Longitudinal Study of Cognitive Aging

In the Victoria Longitudinal Study (VLS), a series of cross-sectional and longitudinal studies pertaining to the description and explanation of changes in cognitive performance in late adulthood are conducted. The research is designed to examine the extent and trajectories of aging-related cognitive and memory changes, as influenced by (a) patterns of differential decline in theoretically derived classes of influencing/cognitive components, and (b) conditions representing selected physiological, health, and lifestyle characteristics.

Role: Consultant

5P01AG009524-23

Frisina (PI)

03/01/2016 – 02/28/2021

NIH/NIA

Aging Auditory System: Presbycusis and Its Neural Basis

This program project consists of a set of discrete but connected disciplines organized to (1) investigate fundamental perceptual declines in presbycusis, and (2) to determine its neural and molecular bases. I serve as data analyst for the project.

Role: Co-I

5R01CA129769-08

Mandelblatt (PI)

12/01/2017 – 11/30/2020

NIH/NCI

Older Breast Cancer Patients: Risk for Cognitive Decline

This project is a competitive renewal of an ongoing study of older breast cancer patients and healthy controls. I am PI on the subcontract from Georgetown University and will be involved in the analysis of the longitudinal data from the project.

Role: Co-I (PI of subcontract)

Completed Research Support

5R21AG045722-02

Crowe (PI)

09/15/2015 – 05/31/2017

NIH/NIA

Cognitive Aging in a Population-Based Sample of Older Adults in Puerto Rico

This was the first study to examine risk factors for cognitive decline and cognitive impairment in a population-based sample of older adults from the U.S. commonwealth of Puerto Rico. This exploratory/developmental project extends existing knowledge of how factors across the life course may influence cognitive outcomes in later life and lay the groundwork for future data collection in this population.

Role: Consultant

5R21CA191594-02
NIH/NCI

Jim (PI)

01/01/2015 – 12/31/2016

Internet-Assisted Cognitive Behavior Intervention for Targeted Therapy Fatigue

Fatigue is the most common symptom and among the most important quality of life issues experienced by patients being treated with oral targeted therapy for chronic myelogenous leukemia. The proposed development and preliminary evaluation of a form of cognitive behavior therapy designed specifically for fatigued patients on maintenance oral targeted therapy represents the first systematic attempt to address this problem. This research provides a strong foundation for a larger multicenter clinical trial expected to yield a highly effective and readily disseminable intervention that addresses a major treatment consequence in the growing population of patients for whom target therapies are transforming cancer from a life-threatening illness to a chronic illness.

Role: Co-I

4R01CA164109-05
NIH/NCI

Jim (PI)

09/01/2012 – 06/30/2018

Sickness Behaviors in Gynecologic Cancer Patients Treated with Chemotherapy

The major goals of the project are to examine immunologic predictors of longitudinal changes in sleep, fatigue, and depression in gynecologic cancer patients undergoing chemotherapy.

Role: Co-I

5R03CA191712-02
NIH/NCI

Scott/Small (MPI)

07/02/2015 – 06/30/2018

Daily Cognitive Functioning Among Cancer Survivors

The objective of this project is to examine changes in cognitive performance among women treated for breast cancer. There are two aims in this project: (1) whether the cognitive performance that we assess in laboratory settings is an accurate representation of the kinds of daily cognitive challenges that cancer survivors experience, and (2) whether survivors have good and bad days in their daily cognitive performance and if we can predict this based on how fatigued, depressed, or stressed they are feeling that day.

Role: Co-PI

5R01HD080096-03
NIH/NIMH

Storch (PI)

01/01/2014 – 12/31/2016

2/3 Treatment of Anxiety in Autism Spectrum Disorder

This project proposed a randomized clinical trial to evaluate the efficacy of cognitive-behavioral therapy relative to an education/support/attention active control condition to alleviate anxiety symptoms among children with Autism spectrum disorders.

Role: Co-I