Concept Paper Template

Provisional Paper Title:
Low childhood self-control predicts accelerated aging and reduced preparedness for later life

Proposing Author:
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P.I. Sponsor:
Terrie Moffitt, Avshalom Caspi

Today's Date: 14 December 2018

Please describe your proposal in 2-3 pages with sufficient detail for helpful review.

Objective of the study:

In 2011, Moffitt and colleagues carried out an analysis in the Dunedin Study which showed that low self-control in childhood predicted health and wealth problems in adulthood (through age 32 years).[1] These health and wealth problems are known warning signs of later-life age-related disease and financial dependence, respectively. We plan to extend Moffitt and colleagues' analysis to evaluate associations between childhood self-control and aging in the Dunedin Study, using data collected through age 45 years. We have two primary aims:

Aim 1: To test whether participants with lower childhood self-control exhibit accelerated aging of the body and brain.

Aim 2: To test whether participants with lower childhood self-control exhibit reduced preparedness for later-life health and financial demands.

Data analysis methods:

We will use regression to predict adult aging outcomes from childhood self-control. The type of regression model used will depend on the scale of the outcome variable (e.g., ordinary least squares for continuous data, logit models for binary data).

Covariates will include participant sex, childhood IQ, and childhood social class.

Variables needed at which ages:

For those measures not yet available or in process at phase 45, we will request the phase-38 versions and update as phase-45 data become available.

Background variables and controls
Participant ID number (SNUM)
Participant sex (SEX)
Childhood IQ (WFSIQ711STD)
Childhood SES (SESAV115)

Self-control
Childhood self-control (LSCUW311)

Health
Primary
Pace of Aging, ph. 38 & 45
Facial age (photo ratings), ph. 38 & 45
fMRI brain age, ph. 45
fMRI white matter hyperintensities, ph. 45
Gait speed, ph. 45
Health literacy [multiple-choice, open-ended, & combined scales], ph. 45

Secondary
Informant-reported facial age, ph. 45 (INFAGEAPP45)
Research worker-reported facial age, ph. 45 (LOOKSOLD45)
Self-reported life expectancy, ph. 45 (HRSL7, HRSL8)

Finances
Primary
Credit scores, ph. 38 (VEDAinsolvl38)
Financial literacy [multiple-choice, open-ended, & combined scales], ph. 45
Financial planfulness, ph. 45 (FIN10 through FIN20; US1, US2)
Financial control, ph. 45 (NZ1, NZ2, NZ3)
Informant-reported financial problems, ph. 45 (IN58)

Secondary
Financial advice [savings, insurance, retirement], ph. 45 (K2, K4, K5)

General
Attitudes toward aging, ph. 45 (AA1 through AA5)

Described above are the pre-planned analyses. Additional analyses may be added as suggested through internal review and will be identified as secondary in the manuscript.

Significance of the Study (for theory, research methods or clinical practice):
Extending healthspan in the context of an aging population is a major public-health challenge.[2,3] Risk for age-related disease and mortality manifests early in the life-course.[4-6] If self-control predicts both biological and behavioral factors associated with aging, it would be a salient intervention target.

References cited:
[1]Moffitt TE, Arseneault L, Belsky D, et al. A gradient of childhood self-control predicts health, wealth, and public safety. *PNAS* 2011; 108: 2693-2698.

[2]Burch JB, Augustine AD, Frieden LA, et al. Advances in geroscience: impact on healthspan and chronic disease. *J Gerontol* 2014; 69: S1-S3.

[3]Vos T, Flaxman AD, Naghavi M, et al. Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet* 2012; 380: 2163-2196.

[4]Belsky DW, Caspi A, Cohen HJ, et al. Impact of personal-history characteristics on the Pace of Aging: implications for clinical trials of therapies to slow aging and extend healthspan. *Aging Cell* 2017; 16: 644-651.

[5]Danese A, McEwen BS Adverse childhood experiences, allostasis, allostatic load, and age-related disease. *Physiol Behav* 2012; 106:29-39.

[6]Gavrilov LA, Gavrilova NS. Early-life programming of aging and longevity: The idea of high initial damage load (the HIDL hypothesis). *Ann N Y Acad Sci* 2004; 1019: 496-501.

Data Security Agreement

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Today's Date	14 December 2018

Please keep one copy for your records and return one to the PI Sponsor

Please initial your agreement

LR	I am current on Human Subjects Training (CITI (www.citiprogram.org) or equivalent)
LR	My project is covered by Duke or Otago ethics committee OR I have /will obtain ethical approval from my home institution.

LR	I will treat all data as "restricted" and store in a secure fashion.
	My computer or laptop is:
	    a) encrypted (recommended programs are FileVault2 for Macs, and Bitlocker for Windows machines)
	    b) password-protected
	    c) configured to lock-out after 15 minutes of inactivity AND
	    d) has an antivirus client installed as well as being patched regularly.

LR	I will not "sync" the data to a mobile device.
LR	In the event that my laptop with data on it is lost, stolen or hacked, I will immediately contact Professor Moffitt or Caspi. (919-684-6758, tem11@duke.edu, ac115@duke.edu)
LR	I will not share the data with anyone, including my students or other collaborators not specifically listed on this concept paper.
LR	I will not post data online or submit the data file to a journal for them to post. *Some journals are now requesting the data file as part of the manuscript submission process. The Dunedin Study Members have not given informed consent for unrestricted open access, so we have a managed-access process. Speak to Terrie or Avshalom for strategies for achieving compliance with data-sharing policies of journals.*
LR	I will delete all data files from my computer after the project is complete. Collaborators and trainees may not take a data file away from the office. The data remains the property of the Study and cannot be used for further analyses without an approved concept paper for new analyses.

Signature: L. Richmond-Rakerd

CONCEPT PAPER RESPONSE FORM

A

Provisional Paper Title	Childhood self-control predicts accelerated aging and reduced preparedness for later life
Proposing Author	Leah Richmond-Rakerd
Other Contributors	Terrie Moffitt, Avshalom Caspi, HonaLee Harrington, Renate Houts, Line Rasmussen, Jasmin Wertz, Sena Park, Elizabeth Sack, Ahmad Hariri, Max Elliott, Annchen Knodt, Tracy d'Arbeloff, Maria Sison, David Ireland, Antony Ambler, Richie Poulton
Today's Date	14 December 2018

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B. To be completed by potential co-authors:

	Approved
	Not Approved
	Let's discuss, I have concerns

Comments:

Please check your contribution(s) for authorship:

	Conceptualizing and designing the longitudinal study
	Conceptualizing and collecting one or more variables
	Data collection
	Conceptualizing and designing this specific paper project
	Statistical analyses
	Writing
	Reviewing manuscript drafts
	Final approval before submission for publication
	Acknowledgment only, I will not be a co-author

Signature:

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