Lessons Learned from the ESCAPE Study (Effects of Stress on Cognitive Aging, Physiology, and Emotion)

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Cognitive Function in Everyday Life



Challenges to Mobile Cognitive Assessments

- 1. Will individuals, including racially, ethnically, and socioeconomically diverse older adults, adhere to an intensive data collection protocol?
- 2. Are measures of daily cognitive performance and memory lapses reliable?
- 3. What do these intensive data tell us about **risk** for poor cognitive performance, individual differences in **decline**, and implications for other **quality of life** indicators?

Effects of Stress on Cognition, Aging, Physiology, & Emotions (ESCAPE) Study

Co-op City, Bronx, NY

Population: ~40,000

~1 square mile

Sampled from Registered Voter Lists (RVL)

N = 233 **Age** = 25-65 years (*M* =47.8, *SD* =10.7) **Gender:** Male: 33%, Female: 67%

Work*:

- Working: 52%
- Retired: 13%
- Looking for work: 26% *Baseline data collection: 5/12-12/13

Education:

- <H.S. diploma: 5%
- H.S./GED: 17%
- Some college: 35%
- College: 25%
- Grad/prof: 18%

Income: *M*=\$40,000

- <\$22,000: 23%
- \$20-40,000: 27%
- \$40-60,000: 21%
- \$60-80,000: 12%
- >\$80,000: 17%

Race & Ethnicity:

- Non-Hispanic White: 9%
- Black: 62%
- Hispanic White: 17%
- Hispanic Black: 7%
- Other: 4%

14 days = 1 "measurement burst"



Measurement Burst Design

(Cho, Pasquini, & Scott, 2019; Nesselroade, 1991; Sliwinski, 2008, 2011)



1. Will individuals, including older adults, adhere to an intensive data collection protocol?

Completed 81% "Beeped" Mobile Cognitive Assessments



Completed **81%** Evening Subjective Memory Reports During the day today did you forget any of the following? (Check all that apply) An errand/chore

MOTOROLA

Finish a task

Appointment

Why you entered a room None of the above

Next

(Hyun, Sliwinski, & Smyth, 2019)

2. Are data on mobile cognitive assessments in daily life reliable?



2. ...correlate with and are valid indicators of individual differences in cognitive function.

---- Mobile assessment ----



(Sliwinski, Mogle, Hyun, Munoz, Smyth, & Lipton, 2018)

For measurement info on daily memory lapse checklist – see Mogle et al. (2019)

What do these intensive data tell us about risk, decline, and other quality of life indicators?



(Zhaovang, Sliwinski, Martire, & Smyth, 2018)

Applying the ESCAPE Lessons Learned: Einstein Aging Study (EAS)

Longitudinal, Measurement Burst Design



Applying the ESCAPE Lessons Learned: EAS Mobile Cognitive Assessments



Mobile Monitoring of Cognitive Change (M2C2; MPI: Chinchilli, Sliwinski, Yabiku)

Applying the ESCAPE Lessons Learned: EAS

- Probability sampling frames from Bronx County Registered Voter Lists
- Data collection in progress, N_{total} = 600
- Age ≥ 70 years
- Expected enrollment:
 - 64% Female
 - 50% Non-White
 - 18% Hispanic/Latinx
 - Expected MCI:
 - 129 Prevalent (MCI at baseline, non-remitting)
 - 118 Incident (MCI-free at baseline, dx & non-remiting ≥ 2 waves)

Applying the ESCAPE Lessons Learned: EAS

Link to Biological & Psychosocial Functioning



MPI: Lipton & Sliwinski P01AG003949

- Stress & Pain (PI: Lipton)
- Autonomic Function (PI: Derby)
- Ambulatory Cognitive Assessment (PI: Sliwinski)
- Cores: Administrative, Clinical, Statistical, Neuroimaging, Neuropathology



MPI: Engeland & Graham-Engeland RF1AG056487

- Negative & Positive Affect
- Inflammation
- Lipid Profiles

Upcoming/Pending: Testing Everyday Markers of **Personality** as Indicators of Cognitive Impairment and Risk Factors for Cognitive Decline (PI: Scott)

Acknowledgements

- National Institute on Aging grants:
 - R01 AG039409 (PI: Sliwinski)
 - R01AG042595 (MPI: Graham-Engeland & Engeland)
 - R03AG050798 (PI: Scott)
 - P01AG003949 (MPI: Lipton & Sliwinski)
 - RF1AG056487 (MPI: Engeland & Graham-England)
- National Center for Advancing Translational Sciences (NCATS)
- the Leonard and Sylvia Marx Foundation
- The Czap Foundation
- CTSA 1UL1TR001073

- Einstein College of Medicine
 - Mindy Katz, Marylou Giraldi, and team
- Pennsylvania State University
 - Jacqueline Mogle, Emily Repka, Alexa Allan
- Stony Brook University
 - Giancarlo Pasquini
- ESCAPE and EAS participants

For more information on Mobile Monitoring of Cognitive Change (M2C2): contact Alexa Allan (<u>aca5399@psu.edu</u>)

Mobile Monitoring of Cognitive Change (M2C2; MPI: Chinchilli, Sliwinski, Yabiku): <u>https://pennstate.pure.elsevier.com/en/projects/ambulatory-methods-for-measuring-cognitive-change</u>

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