Using a Habit Formation Intervention to Increase Walking in Midlife Working Adults

Jane Ebert, Brandeis University

- Many adults insufficiently physically active for good health
  - E.g., 39% in UK , 60% in US (British Heart Foundation, 2017; CDC, 2013)
- Increases in physical activity rarely maintained
  - Interventions often fail, or gains are not maintained (E.g., Rothman, 2000)
  - In past, predominant focus on reflective processes (e.g., intention) (Rhodes & Rebar, 2018)
  - Reflexive or automatic processes (e.g., habits) promising approach (Rothman, Sheeren, & Wood, 2009)
- Current study
  - Preregistered (ClinicalTrials.gov), pilot study, randomized controlled trial
  - Uses **habit formation intervention to increase AND maintain** physical activity (walking)
  - In **working midlife adults:** challenging (busy) and important (establishing behaviors for healthy aging) sample

  ALSO
  - Measure and examine importance of **contextual and other factors for individuals** – including **routine daily schedules** for individuals

Study design and measures

BASELINE
1 week

→

INTERVENTION
4 weeks

→

FOLLOW-UP
4 weeks later

114 adults

- working
- midlife 40-65
- insufficiently active

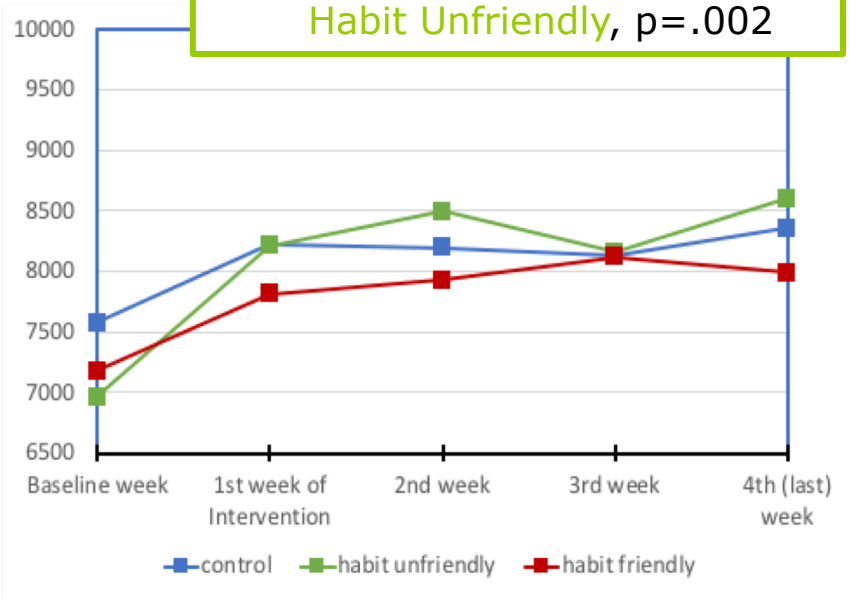
Each week:

- Given daily goal
- Schedule planning condition (randomly-assigned)
  - **No schedule plan** (control)
  - **Habit-friendly** (consistent contexts)
  - **Habit-unfriendly** (different contexts)

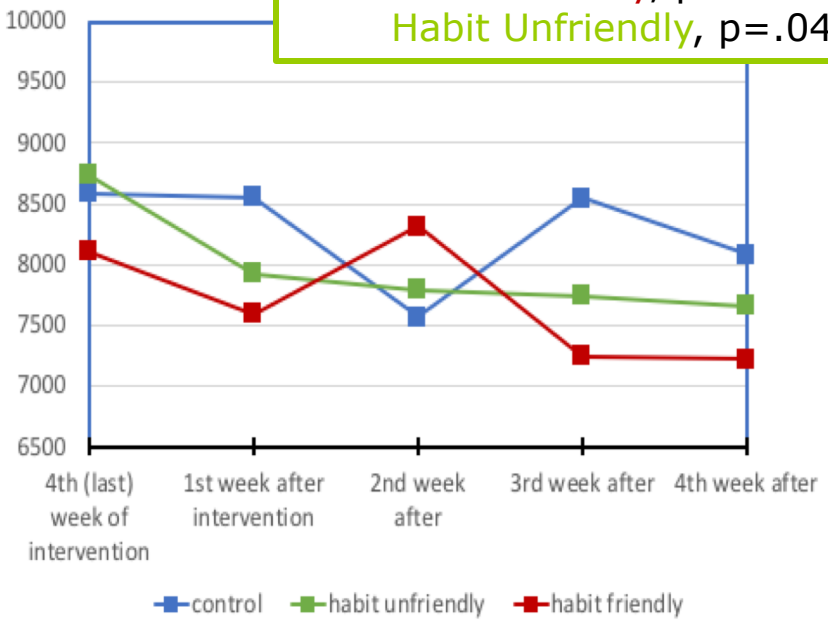
- **Measures**:
  - Pre-, post-intervention, Follow-up, Some weekly, Some daily
  - **DVs**: Steps, Habit (including automaticity component), + others
  - **Contextual**: Schedule (e.g., routine) + others
- **Predict**: Maintenance of steps post-intervention for Habit Friendly only

Steps: Increase during intervention? Maintenance afterwards?

During intervention: increase
Control, p=.08
Habit Friendly, p=.05
Habit Unfriendly, p=.002



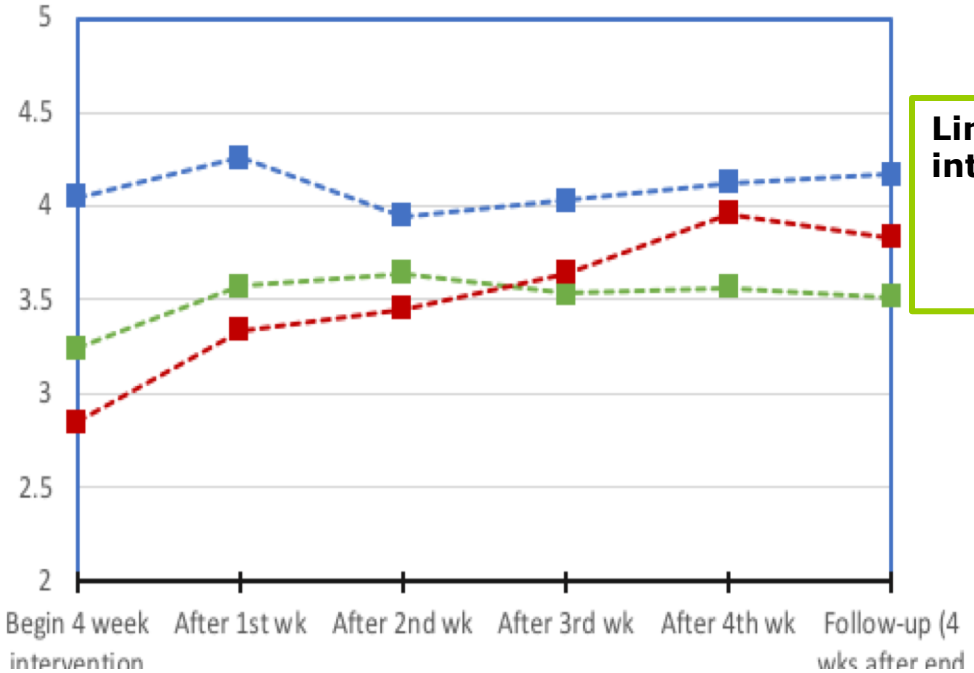
After intervention: No maintenance. Some decrease.
Control, ns
Habit Friendly, p=.03
Habit Unfriendly, p=.04



- Between conditions, Fs < 1.00, ns

Another example of failed maintenance?

For the Habit-friendly condition only, habit automaticity increases during intervention, and remains to 4-week follow-up



Between conditions, Fs < 1.93, ns
Similar results for habit strength

Linear contrasts for intervention:
Control, p=.ns
Habit friendly, p=.02
Habit unfriendly, p=.ns

Habit friendly
Follow-up vs Beginning, p=.04

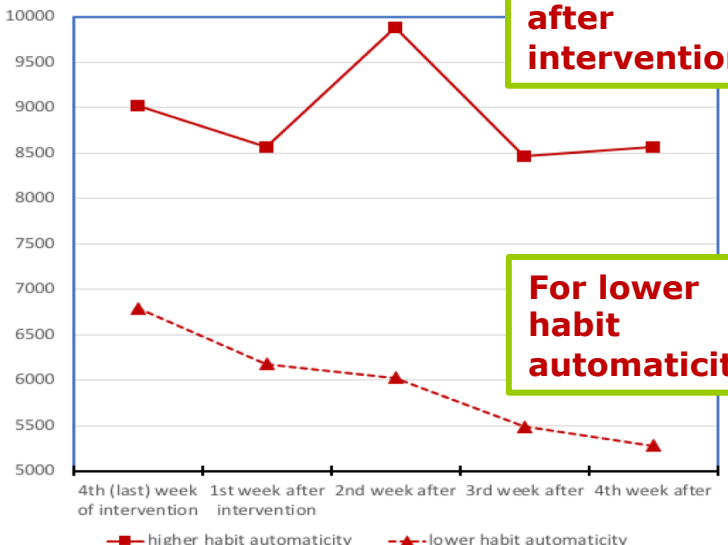
- Considerable variability between individuals in steps and habit

→ Use Multi-level modeling (MLM) of individuals' growth curves.

- **Change in habit automaticity significantly predicts change in steps for habit friendly vs. other conditions**

→ **More maintenance for higher automaticity**

Steps for higher habit automaticity after intervention



For lower habit automaticity

Conclusions

- Change and maintenance of physical activity (PA) is challenging in busy midlife adults
- Habit formation promising route
- Considerable variability between individuals
  - In steps and habit
  - Also on contextual variables, e.g., schedule routine, walkability of environment, etc
  - Important to capture to understand variability → what predicts who benefit from interventions
  - Important role of analytical approaches such as MLM for longitudinal data

- Funding
  - Boston Roybal Center for Active Lifestyle Interventions (RALI)
  - National Institute of Aging, Grant# P30 AG048785