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

**114** adults
- working
- midlife 40-65
- insufficiently active

**BASELINE**
1 week

**INTERVENTION**
4 weeks

**FOLLOW-UP**
4 weeks later

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
- **DV**s: 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, \( p = 0.08 \)
  - Habit Friendly, \( p = 0.05 \)
  - Habit Unfriendly, \( p = 0.002 \)

- After intervention: No maintenance. Some decrease.
  - Control, ns
  - Habit Friendly, \( p = 0.03 \)
  - Habit Unfriendly, \( p = 0.04 \)

- Between conditions, \( F_s < 1.00, \) ns

Another example of failed maintenance?
For the Habit-friendly condition only, habit automaticity increases during intervention, and remains to 4-week follow-up.

- 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.

Between conditions, $F_s < 1.93$, ns
Similar results for habit strength

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

- 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 \( \rightarrow \) 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