Differences in Adults' Sedentary and Physical Activity Levels Across Social and Physical Contexts: An Ecological Momentary Assessment and Accelerometer Study

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BACKGROUND

•Preliminary studies using Global Positioning System (GPS) methodologies have been able to identify some contexts where adults' physical activity occurs (e.g., home, work, school).

•However, these strategies are weak at differentiating between indoor and outdoor settings at the same location, micro settings within the same location, and types of social contexts.

•These limitations may be partially addressed using real-time self-report Ecological Momentary Assessment (EMA), which can simultaneously measure where and with whom behaviors occur.

RESEARCH AIMS

This study used EMA paired with accelerometers in low-to-middle income, ethnically-diverse adults to compare the levels of sedentary and physical activity occurring across specific social and physical contexts. A second objective was to determine whether context-specific patterns differed for men and women.

PARTICIPANTS

•N = 114 adults
•Ages 27-73 years (M = 40.42, SD = 9.74)
•73.5% Female
•66.1% Married
•60.5% Overweight/obese
•31.0% Hispanic/Latino
•27.3% Household income < $40,000

PROCEDURES

•Monitoring occurred across 4days (2 weekdays and 2 weekend days)
•8 randomly-spaced prompts each day (32 total)
•Auditory beep when time to complete a survey
•Reminder prompt after 3 min for missed entry
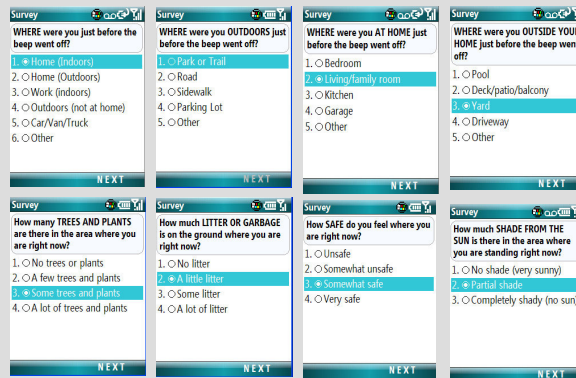
EQUIPMENT

Ecological Momentary Assessment (EMA) data was collected through an HTC Shadow mobile phone (T-Mobile USA, Inc.).

Accelerometer
The Actigraph, Inc. GT2M model activity monitor provided a measure of physical activity that was time matched to the EMA entries.

MEASURES

Ecological Momentary Assessment

Accelerometer
•**Moderate-to-vigorous physical activity (MVPA) in +/- 15 min. of each EMA prompt-** > 2020 counts per minute (equivalent to 3 METs). (Freedson et al., 1997; Troiano, 2008).
•**Sedentary Activity (SA) in +/-15 min. of each EMA prompt -** <100 counts per minute (Healy, 2008).

DATA ANALYSES

•Data were analyzed using multilevel linear regression modeling in SUDAAN 10.0. All models tested for gender interactions and controlled for age, ethnicity, annual household income, weight category, day of week, and time of day (morning, afternoon, vs. evening).

RESULTS

•On average, participants answered 82% (range 25% – 100%) of EMA prompts.

•Females engaged in more MVPA when outdoors at home than males; whereas males engaged in more MVPA when outdoors at a park than females (Fig. 1)

•When at home (other than in bedroom or living room), males engaged in more SA than females; whereas when at work, females engaged in more SA than males (Fig. 2)

• There were no significant differences in MVPA or SA across social context s.

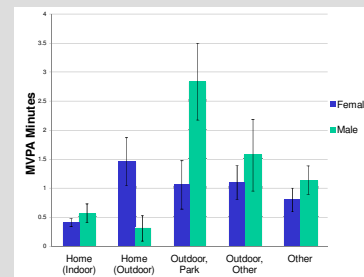Fig. 1: Physical Context x Gender Differences in MVPA (+/-15 min of each EMA prompt)

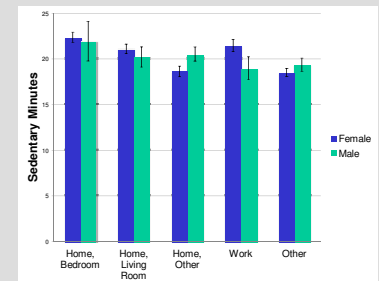Fig. 2: Physical Context x Gender Differences in SA (+/- 15 min of each EMA prompt)

•There was a significant interaction between perceived greenness/vegetation and gender (Adj. Wald F=3.95, p<.05).

•There was a positive association between vegetation and MVPA minutes for males but not females (Fig 3).

Fig. 3: Perceived Vegetation x Gender Differences In MVPA (+/-15 min of each EMA prompt)
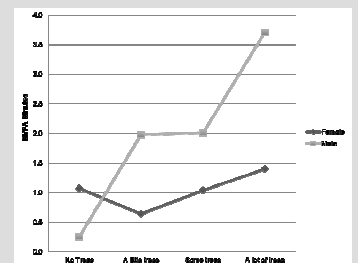
CONCLUSIONS

•Men and women may differ in types of contexts where they prefer or have the opportunity to be physically active. Alternatively, men and women may differ in their response to contextual features that may promote physical activity.
•Outdoor contexts, especially parks and those with greater vegetation, appear to be particularly salient settings for men in terms of promoting higher activity levels.

ACKNOWLEDGMENTS