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Introduction

- Passive sensing using consumer smartphones may identify subtle behavioral patterns signaling risk for Alzheimer's disease and related dementias (ADRD).
- This method is in its early stage of development and there are many hurdles related to privacy and implementation.
- Opportunities exist to proactively improve usability and acceptability by centering participant preferences.
- Our primary goal** was to identify key usability insights from two preliminary smartphone phenotyping studies, including barriers and facilitators to acceptability and trust, to inform the design of an ongoing validation study.

Methods

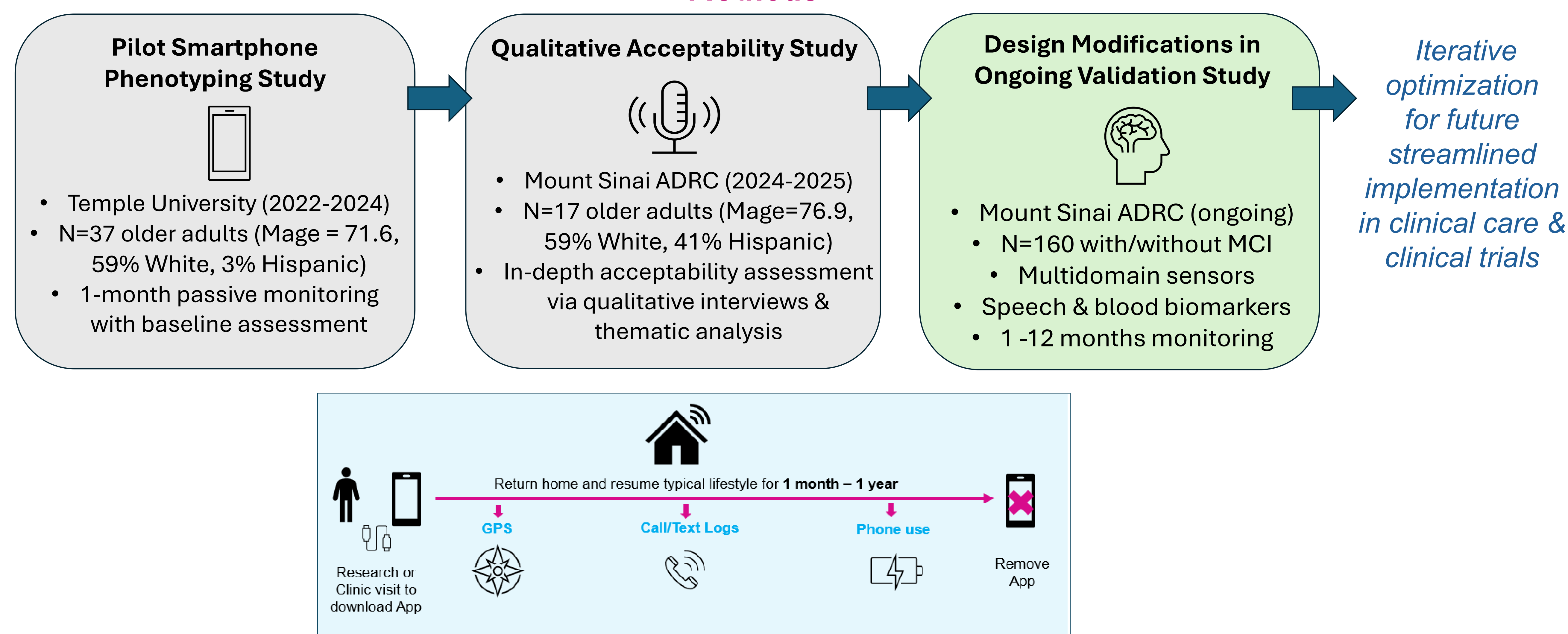


Figure 1. Visual guide used in Qualitative Acceptability Study interview

Results

Our preliminary studies have yielded four overarching categories linked to enhanced acceptability and feasibility; tangible improvements we have made to our ongoing study design are shown in green bold:

Consent, Communication & Transparency

- Enhanced consent process
- Clear purpose of study/data use

★ **Infographic**

Data Storage, Security & Control

- HIPAA-compliant storage & transmission
- Control over data collection/sharing

★ **Opt-out of specific sensors**

User-centered design

- Adapt to user preferences
- Anticipate potential usability issues (battery drain, wearable discomfort, EMA burden)

★ **Custom survey time; extended monitoring option; portable chargers**

Data Quality & Monitoring

- Proactively mitigate missing data
- Understand hardware/software differences
- Added value of contextual EMA?

★ **In-person training & config; automated missing data monitoring**

Figure 2. Key lessons learned to support feasibility and acceptability

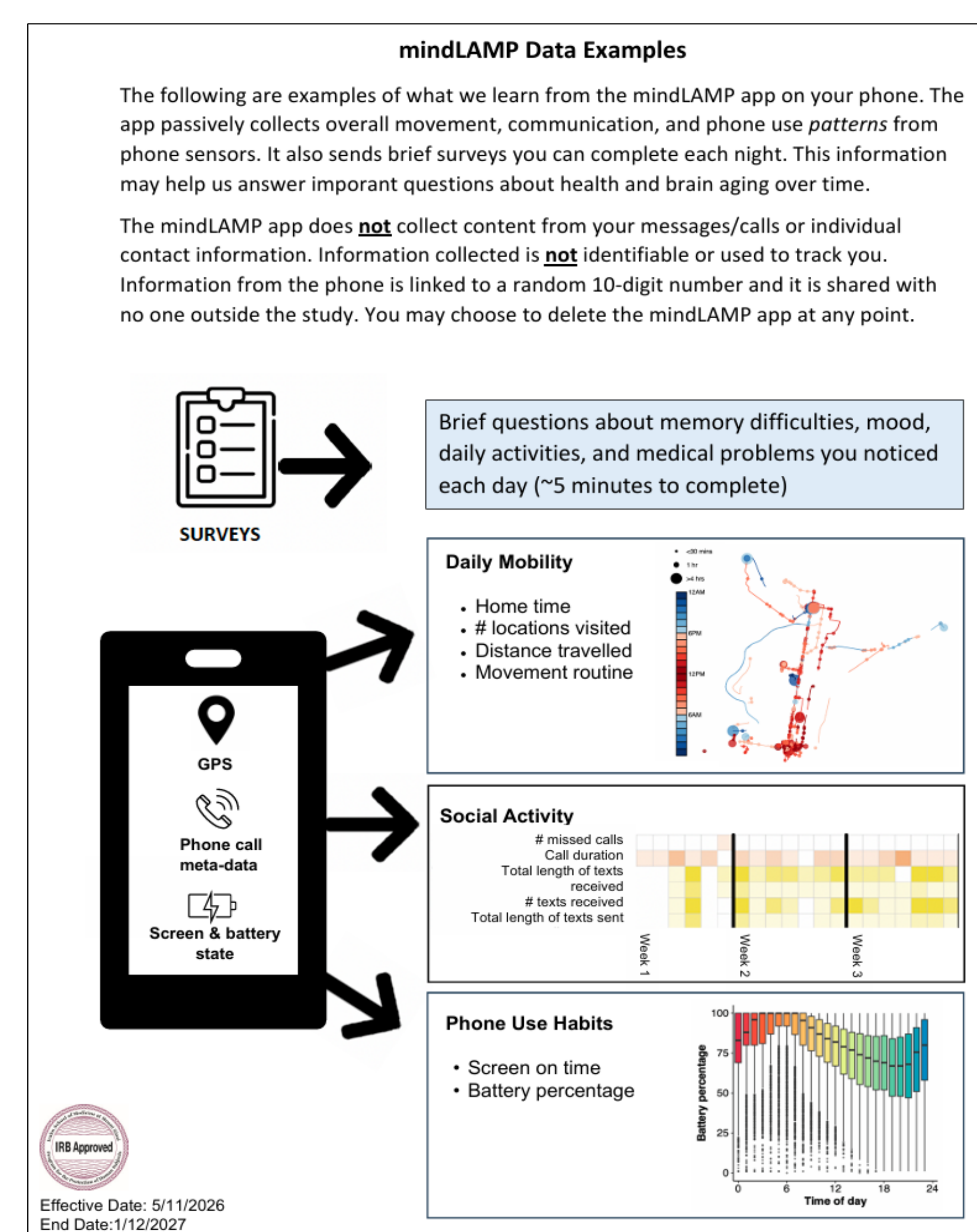


Figure 3. Infographic from current consent visit

Conclusions

- Engaging older adults in the design and implementation of passive sensing technologies is crucial to promote trust and enhance scalability and impact.
- We applied actionable feedback to an ongoing smartphone sensing study, which has yielded positive engagement and retention thus far.
- Final recruitment and retention outcomes and participant feedback will inform additional modifications for future applications.

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