



Setting Up the Study

ESM Introduction Series: Part One

Setting Up the Study

- **Step One:** Decide whether ESM is what you need
- **Step Two:** Set study parameters



Step One: Decide whether ESM is what you need

- For episodic (experiential) as opposed to semantic (conceptual).
- Retrospective reporting may be more useful for predicting intentions than aggregated online assessments.
- Target participants who are willing and able to provide momentary reports.
- Control over the situation
 - ✓ If more control is needed = lab
 - ✓ If a more natural environment is needed = ESM



Step Two: Set Study Parameters

1. Protocol type
2. Sampling periods
3. Survey length



Set Study Parameters: Protocol Type

- **Interval contingent:** (e.g., every 10am and 6pm; at the end of every day; etc.); least burdensome to participants
- **Signal contingent:** (e.g., when signaled by a notification--scheduling can be pure random or stratified within a block); most burdensome to participants
- **Event contingent:** (e.g., after every interaction with your direct supervisor lasting for more than 10 minutes) reporting only when the event happens; critical to define inclusion criteria (what counts as event for a participant?)
- **Context contingent:** (e.g., based on location or specific event) reporting only context triggers experience capture (e.g., <http://web.mit.edu/caesproject/>)



Set Study Parameters: Protocol Type

Decision will be based on

1. Prevalence of target behavior or focal event/experience
2. Susceptibility of phenomenon to retrospective bias
3. Participant response burden



Set Study Parameters: Protocol Type

- **Signal and Time Contingent**
 - Consider as well temporal framing of assessments and the time frame of questions
- **Immediate / Online** (e.g., what are you doing right now?)
 - Concern about recall biases
 - May not capture specific behaviors when signal occurs
- **Short-term retrospective** (e.g., what were you doing in the last two hours?)
 - Concern about capture of behaviors when signal occurs
- **Less concern about recall bias**
 - Prospective (e.g., what do you intend to do in the next two hours?)



Set Study Parameters: Sampling Periods

Sampling period: Number of observations needed for a stable estimate of a phenomenon within each person.

- Run a multilevel power analysis (Maas & Hox; 2005; Snijders & Bosker, 1999); depends on level of analysis (within- vs between-) and effect size
- Statistical power for cross-level interaction: <http://www.hermanaguinis.com/crosslevel.html>
- Guideline for testing cross-level interaction (level 2 moderator): at least 30 people with 30 observations; 60 people with 25 observations; 150 people with 5 observations (Kreft & DeLeeuw, 1998); ~ 50 (level 2) most ESM-based organizational studies
- If you want to increase power, better to add people than observations (Bolger, Stadler, & Laurenceau, 2012)



Set Study Parameters: Sampling Periods

Additional References:

1. Lane, S. P., & Hennes, E. P. (2018). Power struggles: Estimating sample size for multilevel relationships research. *Journal of Social and Personal Relationships*, 35, 7-31.
2. Lane, S. P., & Hennes, E. P. (2019). Conducting sensitivity analyses to identify and buffer power vulnerabilities in studies examining substance use over time. *Addictive Behaviors*, 94, 117-123.
3. <https://osf.io/ez2rm/>



Set Study Parameters: Survey Length

- Ideally brief, less than 2 minutes
 - Shortened scales typically used
 - Daily response burden ~15-20 minutes per day (or less if possible)
- Participant burden and anticipated compliance
 - Response rates range from 50%-95%
 - Could be higher in some fields, like clinical psychology



Set Study Parameters: Survey Length

- Naturalistic incidence of events/states
- Enough to capture fluctuations; ideally no more than 6 times per day and no more than 3 weeks (Delespaul, 1992)
- “Breaks” can be given between intensive longitudinal assessment
 - There are studies that go on for months!





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