New Study Designs & Remarks on Adaptive/Responsive Designs

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Future Directions for Social and Behavioral Science Methodologies in the Next Decade: A Workshop

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New Study Designs

- New way of doing “things” in behavioral science research
  - Communication
  - Delivery of treatment/stimulus
  - Measuring behavior
  - Impacting/altering behavior
- Newness is partially enabled by technology
  - Devices
  - Interaction methods and styles

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New Study Designs

- Presentation 1: Adaptive interventions to alter behavior
  - Interventions and delivery mechanism (human/digital/blend) driven by:
    - condition treated, complexity of interventions, individual's past response
  - Individual outcomes
  - Devices enable broader set of interventions

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- Presentation 2: Megastudies to evaluate nudge behavior
  - Many treatments tested across many subjects/sites/populations with same outcomes/goals of interest
  - Population behavioral changes
  - Devices enable broader set of recruitment, contact strategies

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- Presentation 3: AI–Human interaction in behavioral sciences
  - Emerging potential uses of AI/chatbots on "other side" of a human interaction throughout data lifecycle
  - Individual outcomes or population outcomes
  - Technology (software, devices, processing) enable advances

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Takeaways

- What is needed to implement/advance these designs?
  - Variety of features / interventions
    - ‘What levers can we pull?’ in response to different scenarios
  - Experimentation and learning
    - ‘What works?’ *and* ‘What works for who?’ – can we generalize?
  - Centralization
    - Integrate and evaluate data from disparate interactions, revise strategies
  - Speed
    - Use data to determine interventions, deliver to device or participant ‘on time’
  - Updating
    - Evolve with new/improved technologies, new potential interventions or strategies
  - Auxiliary information
    - Relevant information to enrich targeting of interventions or evaluations

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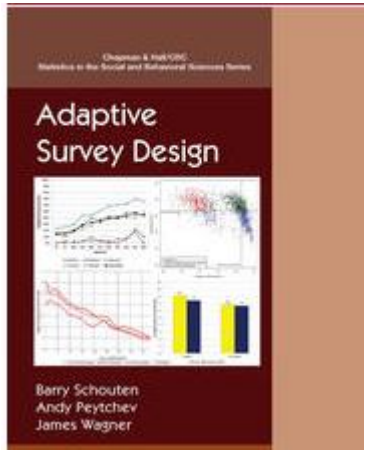
Tie-In to Surveys

- Adaptive and responsive designs
  - Framework for data-driven tailoring
  - Reduce or balance errors and costs
  - ‘Match’ features or procedures to sample cases to obtain optimal outcomes
  - Rely on centralized, accumulating data and statistical/ML models to complete targeting
  - Adaptive: Before/Between Collections
  - Responsive: During Collections



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Responsive design for household surveys: tools for actively controlling survey errors and costs

Robert M. Groves and Steven G. Heeringa

University of Michigan, Ann Arbor, and Joint Program in Survey Methodology, College Park, USA

Adaptive Design in Surveys and Clinical Trials: Similarities, Differences and Opportunities for Cross-fertilization FREE

Michael Rosenblum, Peter Miller, Benjamin Reist, Elizabeth A. Stuart, Michael Thieme, Thomas A. Louis

Journal of the Royal Statistical Society Series A: Statistics in Society, Volume 182, Issue 3, June 2019, Pages 963–982, https://doi.org/10.1111/rssa.12438

Interventions On-Call: Dynamic Adaptive Design in the 2015 National Survey of College Graduates FREE

Stephanie Coffey, Benjamin Reist, Peter V Miller

Journal of Survey Statistics and Methodology, Volume 8, Issue 4, Se
https://doi.org/10.1093/jssam/smz026

Optimizing quality of response through adaptive survey designs

Journal of Official Statistics, Vol. 28, No. 4, 2012, pp. 477–499

by Barry Schouten, Melania Calinescu and Annemieke Luiten

June 2013

Use of Paradata in a Responsive Design Framework to Manage a Field Data Collection

James Wagner[1], *Brady T. West*[1], *Nicole Kirgis*[1], *James M. Lepkowski*[1], *William G. Axinn*[1], *and Shonda Kruger Ndiaye*[1]

Optimizing Data Collection Interventions to Balance Cost and Quality in a Sequential Multimode Survey FREE

Stephanie M Coffey, Michael R Elliott

Journal of Survey Statistics and Methodology, Volume 12, Issue 3, June 2024, Pages 741–763, https://doi.org/10.1093/jssam/smad007

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Some Open Questions on Multiple-Source Extensions of Adaptive-Survey Design

Stephanie M. Coffey, Jaya Dameneni, [...], and Allison Zotti +3 View all authors and affiliations

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Challenges / Open Questions

- Experimentation
  - Necessary for acceptance of new designs, can be expensive and risky, often not generalizable ‘enough’
    - AI (alongside simulation, ML) help experiment without running experiments?
    - Adaptive intervention evaluation methodology for use in a multi-intervention point or multiple-strategy design?
- Generalized Learning/Knowledge Sharing
  - Not all studies are published, some information (cost!) can be proprietary, can be difficult to move ‘the field’ forward
    - Ideas to adopt from megastudy framework?
- Causal Inference Problems
  - Explicitly discussed in AI presentation, potentially an issue in megastudies with different decisions about combinations of features and levels to test

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