Use of Social & Behavioral Science Theories to Understand Transit Use

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Introduction: Transportation Decision Making

- Rational choice theory has been the most widely applied framework for understanding travel behavior
  - “normative model of an idealized decision maker, not as a description of the behavior of real people”
  - Transportation: time, cost, value of journey and quality
- A better understanding of behavior
  - Behavior modification for socially optimal outcomes
Objectives

• How do other fields (behavioral and social science) study the decision making process?
• What are the existing applications of these theories in transportation decisions studies and/or policy?
• Identify research agenda for moving forward with findings.
Objective Two: Study of behavior

- Behavioral economics (Cross-disciplinary)
  - Beliefs and choices diverge from rational choice outcomes

- Psychology (Behavior Science)
  - Emphasizes relationship between internal mental state and behavior; behavior reflects our attitude, beliefs and comfort

- Sociology (Social Science)
  - Emphasizes relationship between the individual and social structure; how environment influences (social, economic and physical structure) influence behavior
Behavioral Economics

• Integrates psychological and neo-classical economic theory to explain why observed behavior varies from optimal choice

• Strongest insights: gains and losses, heuristics, undervaluing and overvaluing attributes

• Studies
  – Review the literature on the use of Prospect Theory in activity-based models (Li and Hensher 2010)
  – Influence of real-time information on social cost and peer compliance on route choice, auto ownership, and pedestrian safety (Gaker, Zheng, Walker 2012)
  – Suboptimal decision making in housing choice (Chatman et al 2013)
Behavioral Economics

• Application:
  – Growing research agenda; Kahneman Nobel Prize in Economics (2002)
  – NORC's Academic Research Center at the University of Chicago; Behavioral Insights Toolkit (UK Department of Transport)
• How and why individuals make choices as they do

• Traditionally based around the idea that internal mental states drive behavior
  – Theory of Planned Behavior (TPB)

• Others, emphasize external conditions
  – Norm Activation Model

• Some account for habit
  – Triandis’ Theory of Interpersonal Behavior (TIB)
Theory of Planned Behavior

- **Attitude**: positive evaluation of service
- **Social Norm**: using transit is good for the environment
- **Perceived Behavioral Control**: the bus is reliable, my transfer will be there
- **Actual Control**: Bus stop nearby
- **Behavior**: takes bus route with transfer

A Psychological Investigation on Public-transport Users’ Intention to Use Routes with Transfers. Subeh Chowdhury and Avishai Ceder (2013)
• Application:
  – These theories increase our understanding about the influences attitudes and preferences on behavior.
  – Not as much promise in advancing behavior modification as sociology and behavioral economic theories.
Sociology

• Sociological perspective says that an individual’s behavior is largely determined by physical, economic and environmental structures. Some individuals are “locked-in” to their actions (lack of decision making power).

• More important to understand the structure and how the individual acts within it

• Studies: Theoretical
  – Social Practice Theory
  – Stages of Change

• Application: Theories show promise in identifying what groups of people and at what time to target/introduce behavioral change (nudge)
Social Practice Theory

- How social & cultural representation (images) influences behavior
- Behavior is viewed as set of three interconnected elements
- The links between the elements are just as important as the elements themselves

Application:
- Argument that cultural representation is important to behavior

Why culture matters for transport policy: the case of cycling in the UK.
Aldred, K Jungnickel - Journal of Transport Geography, 2014
Stages of Change

- Decisions occur across time and in several phases
- We move through phases before we actualize a behavior
- We often “relapse” into old habits

Application: adapt policy intervention to audience (example: incentive at the preparation stage)
Limitation: not knowing where people fall on this model
Moments of Change

- People tend to evaluate their options more closely at a moment of change (new job, moving, having a child etc.)
- Change primes individuals to be open to considering new options and potentially, behavior
- Implementation: Target intervention at a moment of change
  - *In Motion*, King County, WA
  - Education and incentives to modify behavior
Service Quality Index

- Take cues from behavioral science and social marketing
- Well-developed and widely applied to transportation in the literature (empirically tested)
- Application:
  - Draw on specific behavioral insights and social theory to strengthen the SQI
Conclusion

- Understanding the decision making process helps us identify the soft (beliefs, attitudes, knowledge, norm, culture) and hard (infrastructure) constructs we need to develop to encourage modal shift
  - Everything from tools to perceptions
- Targeting the right group of people at the right time is essential to modify behavior
- Psychology helps explain behavior, Sociology and Behavioral Economics offers more in targeting behavior options
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