



Community context, human needs, and transportation choices: A view across San Francisco Bay Area communities



Matt Biggar^{a,*}, Nicole M. Ardoin^b

^a Graduate School of Education, Stanford University, 485 Lasuen Mall, Stanford, CA 94305, United States

^b Woods Institute for the Environment and Graduate School of Education, Stanford University, 485 Lasuen Mall, Stanford, CA 94305, United States

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ABSTRACT

The aggregate of many individuals driving alone in private vehicles, common practice in most U.S. communities, is a major source of carbon emissions in the United States. Finding ways to couple sustainable transportation with individual self-interest and fulfillment of human needs may be critical to shifting transportation behavior to other modes. Taking a community perspective, this study considers how individuals discuss their needs in relation to community conditions impacting personal transportation choices. We collected data through 14 community listening sessions, or modified focus groups, conducted in diverse communities across the greater San Francisco Bay Area (USA). The community context for the groups indicated three types of transportation orientation: (1) car-dominant in which driving alone was the primary mode of travel, (2) mixed-mode in which driving alone as well as a variety of other transportation modes were used for travel, and (3) sustainable transportation-oriented in which alternatives to driving alone were primarily used. In all three types of communities, personal transportation choices related to physical and sociocultural conditions that allowed residents to meet different needs. Our findings suggest that considering how community-level conditions meet practical and psychological needs may offer ways to more effectively support individual-level sustainable transportation choices.

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1. Introduction

Personal transportation accounts for 28% of the average U.S. resident's carbon emissions, making transportation the largest individual source of greenhouse gas emissions (Shulman et al., 2012). Many people in the United States depend on personal automobiles for daily travel; in fact, more than 80% of individual trips occur by personal motor vehicle (Shulman et al., 2012, Buehler and Pucher, 2011). In countries such as the United Kingdom and United States, daily car use and driving alone are deeply embedded in habits, expectations, social patterns, and norms, inhibiting widespread adoption of alternative transportation modes (Davies and Weston, 2015, Darnton, 2004).

Despite its large environmental impact, personal transportation behavior has proven difficult to change (Steg and Vlek, 2009, Corbett, 2005). Research suggesting the importance of coinciding self-interest with pro-environmental behavior (DeYoung, 2000, Kaplan and Kaplan, 2009) may help explain why encouraging less impactful individual transportation is so difficult. To change to other modes of transportation or drive alone less, individuals may fear a loss of convenience, comfort, or other benefits associated with driving habits (Steg and Gifford, 2005). Therefore, to shift society to a more sustainable

transportation¹ orientation, alternatives to driving alone must appeal to individual self-interest and fulfillment of human needs (Steg and Gifford, 2005).

Recent transportation behavior research suggests how satisfaction with transportation experience may help align self-interest with sustainable transportation behavior. In a study of how different transportation modes related to the mood of 13,000 survey respondents, for example, Morris and Guerra (2014) found positive affect during travel experience to be highest among cyclists followed by car passengers. They found that the pleasure derived from carpooling, or ridesharing, was related to the social interaction with others. Martin et al. (2014) found positive well-being and less mental strain was associated with walking and using public transportation in comparison with driving. And St-Louis et al. (2014) found that pedestrians, train commuters, and cyclists reported higher levels of satisfaction—based on time, convenience and social characteristics of travel mode—than did those who drove in personal automobiles. Our study builds on this growing body of research evidence using a human needs² perspective to explore connections between satisfaction and transportation mode choice.

¹ Sustainable transportation is defined as any alternative to single occupancy vehicle use, or driving alone (Schiller et al., 2010, Tumlin, 2011).

² Nuttin (1984) defines human needs as “fundamental dynamisms inherent in the behavioral functioning of living beings.” We use this definition to contextualize the study of personal transportation behavior.

* Corresponding author.

E-mail addresses: mbiggar@connectedtoplace.com (M. Biggar), nmardoin@stanford.edu (N.M. Ardoin).

We also sought to examine how sustainable transportation-related conditions vary between different communities and address human needs. Conditions, or context, that support different human needs can play an important role in framing pro-environmental behavior (in this case, sustainable transportation) as being more about satisfaction than sacrifice (Kaplan and Kaplan, 2009). Kaplan (2000) suggests that individuals' environmental irresponsibility in everyday life results less from internal barriers, such as disinterest or laziness, and more from external conditions, such as lack of infrastructure, desirable choices, or cultural support. Less understood in the emerging research on interactions between place, context, and transportation behavior (Wang, 2015) is how transportation-related physical and sociocultural conditions may either hamper or facilitate fulfillment of human needs. This understanding may be useful in informing efforts to increase sustainable transportation.

Our study considers a community context in analyzing how individuals discuss their transportation needs in relation to personal choices and the conditions impacting those choices. Looking across varied community settings in one region, we examine how sustainable transportation conditions impact human needs and personal transportation choices. To address those research themes, we analyzed data from 14 community listening sessions in the greater San Francisco Bay Area. Connecting and applying theory on self-interested motivation, human needs, and conditions from pro-environmental behavior research may provide new understanding of personal transportation choices and directions for transportation behavior research.

2. Conceptual framework

The potential to engage in sustainable transportation behavior is greater when choices do not require self-sacrifice, but, rather, when they enhance one's own quality of life, allowing individuals to concurrently derive satisfaction from doing something good for themselves as well as the environment (Kaplan, 2000, DeYoung, 2000). Understanding how sustainable transportation can meet different human needs, both practical and psychological, can illuminate ways to engage self-interested individuals in undertaking pro-environmental behaviors.

Practical needs are often of primary concern and may influence daily behaviors, such as those related to transportation. Health behavior research suggests that people, in their daily lives, are most directly concerned with work, finances, and family, while health is valued more abstractly (Johnson, 2013). Therefore, appealing to self-interest around these daily-life concerns may be even more important with pro-environmental behavior given that environmental outcomes are seldom temporally and spatially immediate (Ardoin, 2009). DeYoung and Kaplan (1985) found dominant satisfaction themes related to conservation behavior to be saving money, not wasting time, and maintaining a comfortable existence. Meeting needs for convenience in daily life appears to be particularly important in personal transportation choices (Biggar and Ardoin, 2017). Practical needs may also change depending on one's age and stage in life. A parent of young children, for example, may have several responsibilities related to the health and wellbeing of others, such as providing children with nutritious meals, seeing to their healthcare needs, and transporting them to and from school, whereas a senior citizen may be most focused on her own health- and mobility-related challenges. Thus, it seems unlikely that individuals will adopt sustainable transportation behaviors unless those behaviors are tailored to meet needs related to navigating everyday life, relevant to people's life stage.

Although fulfilling practical needs is important to everyday-life satisfaction, questions arise as to how much modern society prioritizes and focuses on these needs. Shove's (2003a, b) research demonstrates how cultural and social conventions around convenience, comfort, and cleanliness guide many everyday life practices in modern society. Those practices become highly normalized, yet largely invisible,

influences on how we act. Shove (2003a, b) suggests that the relentless demand for convenience coincides with a sense of escalating time pressure and increased pace of life; together, those detract from our ability to carefully consider other aspects that may be important, but competing, such as sustainability and intrinsic satisfaction.

Psychological needs may also influence behavior and relate to deep levels of satisfaction when being met. Fulfilling psychological needs allows optimal engagement in daily life, as well as the promotion of wellbeing and satisfaction (Krapp, 2005). Individuals can derive psychological, or intrinsic, satisfaction from everyday activities that provide enjoyment or promote health. Satisfaction in activities can derive from aesthetic experience, exercise, or other less tangible outcomes (DeYoung and Kaplan, 1985). Relatedness, or connection, a psychological need that maintains mental and physical health (Krapp, 2005), involves the desire to feel socially connected and be accepted (Krapp, 2005, Csikszentmihalyi and Hermanson, 1995). Likewise, human connection to nature can encourage civility, increase clear-headedness, and reduce mental fatigue as found in the Kaplans' highly cited research (Kaplan, 1995, Kaplan and Kaplan, 2011). Needs for closer relationships with people, community, and the environment may motivate individuals to engage in transportation modes that foster such connections. Doing something that one feels matters is also a psychological need, found to be an important component of individual satisfaction in different human activities (DeYoung, 2000). Inherent to human nature, individuals likely pursue behaviors that meet these psychological needs and, subsequently, enhance quality of life.

Availability and quality of different transportation modes vary across communities³; consequently, sustainable transportation options may better meet human needs in one community than another. Circumstances or conditions related to one's context play a central role in human behavior (Tanner, 1999, Kaplan and Kaplan, 2009), such as the influence of the built environment on transportation choices (Ewing and Cervero, 2010, Cervero and Kockelman, 1997). For practical needs, individuals desire transportation conditions that, in addition to being safe and comfortable, are convenient and fit with their everyday-life needs. For psychological needs, individuals may choose modes they perceive to be socially accepted, through which they can connect with others or their environment, or that they find enjoyable. Conditions influence whether a transportation mode meets different practical and psychological needs. Foundational to research-based understandings in environmental psychology, Kaplan and Kaplan (2003) argue for creating alignment between conditions and human needs to bring about optimal behavior. When conditions related to sustainable transportation modes in one's community context meet a number of practical and psychological needs, individuals may develop a sense that biking, carpooling, or riding on public transit, for example, is in their self-interest, motivating sustenance of such behavior.

Different conditions, or context, in our lives can serve as supports or barriers to environmental behavior (Steg and Vlek, 2009, Kaplan and Kaplan, 2009, Kollmuss and Agyeman, 2002). Physical and sociocultural conditions may be particularly influential on sustainable transportation behavior. *Physical conditions* include the built environment—design of streets and transportation infrastructure, density such as population per square mile, diversity of land use, destination accessibility or ease of access to trip destinations and distance to transit (Cervero and Kockelman, 1997, Ewing and Cervero, 2010)—and natural features in one's community context. Those can vary in quantity and quality from one location to the next and influence transportation choices. *Sociocultural conditions* are created by indirect and direct influences from others in one's community, as well as social and cultural conventions and norms. Opportunity for social connections while traveling is an example of sociocultural conditions.

³ In this study, we refer to communities as biophysical and social entities occurring at the scale of cities, towns, or neighborhoods, situated within the context of larger urban or suburban areas.

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