



Do attitudes cause behavior or vice versa? An alternative conceptualization of the attitude-behavior relationship in travel behavior modeling



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ABSTRACT

Attitudes are thought to play an important role in determining people's travel behavior, although researchers have acknowledged the possibility of a reverse relationship. Given the importance of knowledge about the direction of causation as a basis for policies and programs designed to effect behavioral change, the scarcity of in-depth research on this subject is surprising and problematic. The aim of the present paper is twofold: first to assess the bidirectional relationships between attitudes and behavior (in a transport context) and second to present a new framework to study attitude-behavior (in)consistency over time. To achieve these aims, we use data from a two-wave mobility panel to estimate cross-lagged panel models and latent transition models. Results indicate that use of a mode and the attitude towards using that mode mutually influence each other over time. As expected, we find that people who have dissonant (i.e., non-aligned) attitude-behavior patterns are less stable than those who have consonant patterns. Contrary to conventional wisdom and commonly used model structures, however, the effects of behaviors on attitudes are much larger than vice versa. That is, dissonant travelers are more inclined to adjust their attitudes to align those with their behavior than vice versa. Based on these results, we outline several implications for research and policy.

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1. Introduction

Attitudes, broadly defined as affective evaluations (favorable or unfavorable) with regard to particular objects or behaviors (Ajzen and Fishbein, 1977), are generally thought to play an important role in determining people's mode choices and their travel behavior more generally (Gärling et al., 1998). Initial studies investigating the attitude-behavior relationship in a transportation context date back to the late 1970s (Dobson et al., 1978; Tardiff, 1977; Tischer and Phillips, 1979). Since then, more elaborate theoretical frameworks to study the effects of attitudes on behavior have been developed, the most prominent and influential being the Theory of Planned Behavior (Ajzen, 1991). This model has also been extensively applied in the transport domain (Bamberg, 2006; Bamberg et al., 2003; de Groot and Steg, 2007; Heath and Gifford, 2002). Over the past decade, it has also become popular to include attitudes in discrete choice models, leading to a class of so-called hybrid choice models (Ben-Akiva et al., 2002).

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While conceptual and related empirical models generally assume that attitudes influence behavior, researchers typically acknowledge that a reverse relationship, i.e. from behavior to attitudes, may also exist (Ajzen, 2015). Clearly, the question of “which causes which” has important implications for behavioral research, model development, and policy design (Chorus and Kroesen, 2014). Concerning the latter: if attitudes (primarily) influence behavior, it makes sense to try to influence behavior (in desired directions) via promotional and information campaigns targeted at people’s attitudes. If, on the other hand, behavior (primarily) influences attitudes, policy should rather focus on changing people’s behavior directly, e.g. via regulations, or focus on the ‘hard’ determinants of behavior, like travel costs, e.g. via pricing policies. Given that knowledge about the direction of causation is of crucial importance from a research and policy perspective, the scarcity of research addressing this subject is surprising and problematic. After several initial studies addressing this issue explicitly (described in Section 2.3), research on this topic has declined.

Our aim is to reinvigorate interest in this topic by (1) assessing the direction of causation between attitudes and behavior using panel data and (2) by presenting a new framework to study attitude-behavior (in)consistency over time. As will be shown in the paper, this framework identifies the processes through which consistency and inconsistency occur over time and thereby actually transcends the original question of whether attitudes cause behavior or vice versa.

We first describe theories and modeling efforts to investigate the attitude-behavior relationship, considering both fundamental social-psychological research and applied travel behavior research. We then present a ‘person-centered’ framework that overcomes the limitations of the ‘variable-centered’ framework used in studies to date to operationalize a measure of cognitive dissonance within a statistical framework. To empirically test the framework, we analyze data from a two-wave panel of Dutch travelers using the traditional approach, a structural equation model (in particular, a cross-lagged panel model), and using an alternative approach, the latent transition model (Collins and Lanza, 2013).

2. The attitude-behavior relationship

2.1. Attitudes influence behavior

The issue of attitude-behavior consistency has had a prominent place in the history of social science and remains an important problem to date (Glasman and Albarracín, 2006). Research related to the attitude-behavior relationship can roughly be categorized into three generations of research (Fazio, 1990). Initially, research focused on the question ‘is there an attitude-behavior relation?’ The scene was set, in this respect, by several studies reporting very low correlations between attitudes (as reported in surveys) and overt behavior (LaPiere, 1934), leading some authors to reject the attitude-concept all together (Blumer, 1955; Wicker, 1969). On other occasions, however, sizable correlations were found (Goodmonson and Glaudin, 1971; Schuman and Johnson, 1976; Seligman et al., 1979), resulting in a more optimistic view on the role of attitudes and calls for research dealing with the question ‘when (under what circumstances) are attitudes predictive of behavior?’ (Fazio, 1990).

This ‘second generation’ question inspired many researchers to identify and assess the various moderating factors that affect attitude-behavior consistency. For example, the internal consistency of the attitude (Norman, 1975), the temporal stability of the attitude (Schwartz, 1978) and the certainty with which the attitude was held (Fazio and Zanna, 1978) were shown to affect the degree of attitude-behavior consistency. Rosenberg and Hovland (1960) suggested that attitudes are multidimensional, including cognitive, affective and conative (behavioral) components. Since a single attitude measurement would not be able to adequately capture all these components, it followed that such measures would be unable to predict behavior. As another example, Ajzen and Fishbein (1977) emphasized the effect of the degree of correspondence between the attitude and the behavior. They showed that specific behaviors were best predicted by specific attitudes, namely the attitude towards the behavior, whereas general (multiple-act) behaviors were best predicted by broad attitudes. Finally, as a relevant substantive reason for the (sometimes) weak attitude-behavior relationship, it was suggested that other variables (other than attitudes) influence behavior. In this regard, an often studied ‘other variable’ was the degree of social pressure of relevant peers (Frideres et al., 1971; Schofield, 1975).

While the research provided relevant insights as to when attitudes could be expected to be consistent with behavior, the exploratory nature of the field became increasingly problematic. Commenters on the field noted that each new study seemed to identify a new “other” moderating factor (Liska, 1984) and they lamented the general lack of theory (Cooper and Croyle, 1984). These problems led some researchers to take a step back and reflect on the most fundamental and arguably most relevant question of all, ‘how do attitudes guide behavior?’, which Fazio (1990) identified as the ‘third generation’ question.

Various attitude-behavior models emerged that attempted to address this question and thereby fill the theoretic void (Liska, 1984). In terms of the impact on the field, it is safe to conclude that the Theory of Reasoned Action represented the most successful attempt in this regard (Fishbein and Ajzen, 1977). Based on the expectancy-value model, which posits that people consciously act in line with their desires (hence the term ‘reasoned’), this theory specifies that beliefs about the negative and positive consequences of the behavior in question (the cognitive dimension) lead to an overall favorable or unfavorable attitude towards that behavior (the affective dimension), which, in turn, leads to an intention to perform the behavior (the conative dimension) and, eventually, the behavior itself. In addition, next to the attitude towards behavior, the behavioral intention is assumed to be influenced by a person’s subjective norm, reflecting a person’s beliefs about the level of social pressure to perform the behavior.

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