



Contents lists available at ScienceDirect

Transportation Research Part A

journal homepage: www.elsevier.com/locate/tra

Daily travel behavior and emotional well-being: Effects of trip mode, duration, purpose, and companionship

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ARTICLE INFO

Keywords:

Travel behavior
Emotion
Affect
Happiness
Well-being
Satisfaction

ABSTRACT

Positive emotions have long-lasting benefits for human development. Understanding the connections between daily travel behavior and emotional well-being will not only help transportation practitioners identify concrete strategies to improve user experiences of transportation services, but also help health practitioners to identify innovative solutions for improving public health. Prior research on the subject had focused on limited travel behavior dimensions such as travel mode and/or travel duration. Other dimensions such as travel purpose and travel companionship have received limited attention. Using data from the 2012–2013 American Time Use Survey, this paper applied the generalized ordered logistic regression approach and examined how the mode, duration, purpose, and companionship characteristics of a trip shape six different emotions during the trip, including happy, meaningful, tired, stressful, sad, and pain. After controlling for personal demographics, health conditions, and residential locations, we find that biking is the happiest mode; public transit is the least happy and least meaningful; and utilitarian walking for transportation is associated with all four negative emotions. Trip duration has a negative association with happiness and a positive association with stress. Travel for discretionary purposes such as leisure, exercise, and community activities is generally associated with higher levels of positive emotions and lower levels of negative emotions than travel for work or household maintenance. Trips with eating and drinking purposes appear to be the happiest and trips with the purpose of spiritual and/or volunteering activities appear to be the most meaningful. Travel with family especially children or travel with friends is happier and more meaningful than travel alone. Transportation planners in the U.S. are recommended to promote biking behavior, improve transit user experiences, and implement spatial planning strategies for creating a built environment conducive to shorter trips, more discretionary trips, and more joint trips with family and friends.

1. Introduction

Individuals who have high levels of emotional well-being (i.e., who experience frequent positive emotions and infrequent negative emotions) are often successful across multiple life domains including marriage, friendship, income, work, and health (Achat et al., 2000; Lyubomirsky et al., 2005). The broaden-and-build theory of positive emotions suggests that emotional well-being helps people build lasting resources and forms the link between happiness and desirable outcomes (Cohn et al., 2009; Fredrickson and

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<https://doi.org/10.1016/j.tra.2018.09.019>

Received 26 February 2017; Received in revised form 16 September 2018; Accepted 17 September 2018
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Joiner, 2002). Positive emotions promote original thinking, foster sociability and conflict resolution, and encourage liking of self and others, all of which are behaviors and skills paralleling success (Lyubomirsky et al., 2005). Evidence has also shown that general emotional well-being helps to prevent negative physiological reactions to life events, such as depression (Sabatini, 2014; Achat et al., 2000), and is strongly associated with health and longevity (Danner et al., 2001; Diener and Chan, 2011; Lawrence et al., 2015).

Given the known benefits of emotional well-being, it is important for transportation planners to understand the connections between travel behavior and emotional well-being. Transportation plays an important role in our daily lives and Americans spend a significant amount of time per day on daily trips. The 2012–2013 American Time Use Survey shows that Americans on average spend 73.4 min per day on daily trips—almost twice the time spent on socializing and more than four times the time spent on exercising (Hofferth et al., 2013). It is important to know whether some trip types are more likely to induce positive emotions than other trip types after controlling for personal factors. Answering this question will help planners and policy makers develop transportation systems that maximize emotional well-being for all population groups.

The literature on travel behavior and emotional well-being has been fragmented. Under the conventional view that travel is a derived demand, people rarely conduct trips for its own pleasure and trips themselves generate disutility (Ettema et al., 2010). It is only recently that transportation researchers began to investigate how specific trip characteristics may be associated with positive and/or negative emotions (De Vos et al., 2013; Ettema et al., 2015; Morris and Guerra, 2015a; Gärling et al., 2013). Studies have shown that people with a positive attitude toward a certain mode have higher levels of emotional well-being when using that mode (De Vos et al., 2016; St-Louis et al., 2014). Furthermore, people tend to experience negative emotions during long trips, peak-hour work commutes, and bus trips in general (Morris and Hirsch, 2016; Morris and Guerra, 2015b). A separate body of literature focuses on how emotional well-being may have traffic safety implications and highlights the intensive negative emotions associated with driving behavior (Zhang and Chan, 2014; McLinton and Dollard, 2010). Studies have shown that road rage (an elevated level of aggressive feelings during driving) is significantly associated with hazardous driving behaviors (Wells-Parker et al., 2002) and has negative traffic safety consequences (Jeon et al., 2014). However, fewer studies have systemically examined the travel behavior and emotional well-being connections in the context of personal demographics, health conditions, and residential location. Further, although the emotional impacts of some trip characteristics (e.g., mode and duration) have been widely studied, studies on other dimensions of travel behavior (e.g., purpose and companionship) have been limited.

Using data from the 2012–2013 American Time Use Survey (ATUS), this study provides empirical evidence on how various travel behavior characteristics (mode, duration, purpose, and companionship) relates to emotional well-being after controlling for personal demographics, health conditions, and residential location. In the following text, we comprehensively review the related literature on daily travel behavior and emotional well-being and illustrate how this research fills multiple research gaps in the literature. The literature review is followed by detailed descriptions of the ATUS data, the study variables, and the generalized ordered logistic regression approach used in this research. Results from the regression models are presented to show that the mode, duration, purpose, and companionship characteristics of a trip play important and complex roles in shaping emotions during the trip. Following the Results section, implications of the findings for transportation policy and future research directions are discussed.

2. Prior research

The literature review below focuses on studies linking travel behavior to emotional/affective aspects of well-being. A separate body of literature exists focusing on linking travel behavior to cognitive aspects of well-being. Emotional/affective well-being refers to how we “feel” about our lives and cognitive well-being refers to how we “think” about our lives (Diener, 1984). Emotional well-being can be measured by frequency and/or intensity of specific positive and negative emotional experiences such as joy, love, stress, sadness, and anger (Kahneman and Deaton, 2010). In contrast, cognitive aspects of well-being can include overall hedonic (e.g., satisfaction and happiness) and eudaimonic (e.g., meaningfulness) evaluations of one’s life as a whole and/or specific life domains, e.g., work, housing, health, leisure, environment, and travel. The literature review below does not include studies on travel behavior and cognitive well-being.

For the purpose of this review, we searched for published articles using Google Scholar. The term “travel” and “transport” was combined with each of the following emotional well-being keywords including “well-being”, “satisfaction”, “emotion”, “mood”, and “happiness”, yielding ten unique combinations. Of the hundreds of the studies that came up in the searches, we read all abstracts to remove studies are not related to daily travel behavior. For example, a substantial body of research exists on the connections between tourism-oriented leisure travel behavior and emotional well-being (Sirgy, 2009; Wang et al., 2011; Dolnicar et al., 2012). These leisure travel studies were excluded from this review. In the review process, we also discovered studies in the field of traffic psychology that examine negative aspects of travel experiences (such as stress and anger) of road and transit users and yet often do not overlap with the well-being literature. These traffic psychology studies were included in this review. Note studies on the relationship between air travel and negative emotions (i.e. fatigue, stress) (Flower et al., 2003; Samuels, 2012; Reilly et al., 2005) are excluded from our studies. Finally, because measures of travel satisfaction do not always include affective evaluations of emotional well-being, studies focusing on cognitive evaluations of travel satisfaction such as Bergstad et al. (2011) are excluded from this review. By removing the unrelated studies and including additional related studies, we identified 38 studies that provide empirical evidence on the connections between daily travel behavior and emotional well-being. These empirical studies were summarized in Table 1. Note that review articles and conceptual papers such as De Vos et al. (2013) that do not provide original empirical evidence are not included in Table 1.

The summary in Table 1 shows several interesting patterns:

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