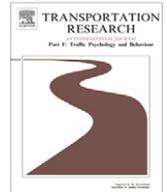


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# Transportation Research Part F

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## Mindfulness, time affluence, and journey-based affect: Exploring relationships

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### ARTICLE INFO

#### Article history:

Received 23 July 2010

Received in revised form 12 December 2011

Accepted 17 December 2011

#### Keywords:

Mindfulness

Time affluence

Journey-based affect

Travel mode

Commuting

Structural equation model

### ABSTRACT

Behavioral travel research has neglected to examine the role of mindfulness in the context of the work commute. Mindfulness is a psychological construct that has been associated with improvements to mental health, social engagement, and behavioral regulation. We examined ways in which users of different travel modes perceive their journey to work from an affective stance, their dispositional mindfulness, and time affluence. Using survey data from 786 university employees, we estimated a structural equation model capturing the direct and indirect relationships between mindfulness and the degree to which commuters find their work trip satisfying and peaceful (commute-related attunement), and related mediators. Bus users, walkers, and bicyclists reported significantly less stress than drivers. Walkers and bicyclists reported greater positive journey-based affect than drivers and bus users. Additionally, walkers and bus users maintained relatively greater perceptions of time affluence than drivers. Modeling results revealed that mindfulness directly, and operating through time affluence, competence, and stress, enhanced attunement to the commuting experience. The findings suggest that enhancing individual-level time affluence and sense of competence using non-motorized modes may encourage individuals to choose active transportation modes.

Published by Elsevier Ltd.

### 1. Introduction

There is growing interest aimed at creating sustainable transportation systems that support physical activity, population health (Badland & Schofield, 2005), and environmental integrity (Abrahamse, Steg, Gifford, & Vlek, 2009). Understanding how users of different travel modes perceive their travel experiences may allow for more effective interventions. Examining affective evaluations and perception of the commuting experience is relevant because it facilitates general understanding of the cognitive mechanisms underlying travel decision-making (Gardner & Abraham, 2008).

Studies investigating the role of self-reported affect in mode choice processes reveal that commuters value their perceived ability to maintain personal space and positive journey-based affect, and that these elements make driving comparably more attractive than using public transit (Mann & Abraham, 2006). Further, when people are asked why they use cars as opposed to alternative travel modes, they tend to reference the car's relative instrumental advantages such as its reliability, convenience, and speed (Gardner & Abraham, 2007). Similarly, owning and operating a vehicle are positively associated with psychological needs of mastery and positive social identity (Ellaway, Macintyre, Hiscock, & Kearns, 2003). Individuals also express symbolic-affective motives for driving, such as the car's capacity to express one's social standing,

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and the pleasure of driving itself when research objectives of assessing underlying motives for car use are not evident (Steg, Vlek, & Slotegraaf, 2001). This is consistent with principles of the Theory of Planned Behavior (Ajzen, 1991), as it appears that affective appraisals of commuting can inform intentions about travel mode decisions, which can then influence mode choice behaviors.

Even though there are apparent affective–symbolic advantages of car use, research on journey-based affect has demonstrated that drivers frequently report feeling stressed on their way to work (e.g., Evans & Wener, 2006; Hennessy & Wiesenthal, 1999; Koslowsky, Kluger, & Reich, 1995). For example, as traffic congestion increases, so do reports of stress and agitation among drivers and users of public transit (Evans & Wener, 2006; Evans, Wener, & Phillips, 2002; Hennessy & Wiesenthal, 1999). Commute-incited stress is a pertinent area of research focus, as it is associated with greater workplace hostility and obstructionism (Hennessy, 2008).

Research on affective appraisals of commuting has facilitated understanding of the cognitive processes associated with travel mode choice and correlates of journey-based affect. Even so, such research has been limited to an examination of proximal work commute attributes such as traffic congestion, journey time considerations, delay, and inter-commuter conflict (Evans et al., 2002; Gatersleben & Uzzell, 2007). However, it is likely that emotional and affective experiences of the commute are influenced by personal and environmental circumstances (Lively & Heise, 2004).

Mindfulness is one such personal circumstance which enhances individuals' mental health, positive social engagement, and adaptive behavioral regulation (Brown, Ryan, & Creswell, 2007). Mindfulness is defined as a present-oriented, open, and nonjudgmental expression of conscious awareness (Brown & Ryan, 2003; Kabat-Zinn, 2003). Unique among other theories of awareness such as self-concept (Buss, 1980; Carver & Scheier, 1998) and integrative awareness (Ryan, 1995), mindfulness is associated with monitoring and observing moment-by-moment sensory and psychic events (Brown et al., 2007). Further, those who practice mindfulness remain detached from identity concerns, seeking instead to accept experiences as they arise (Brown, Ryan, Creswell, & Niemiec, 2008). Therefore, it is reasonable to expect that mindfulness is related to peaceful, restorative experiences within the context of the work commute, which can be labeled commute attunement. Mindful travelers are likely to "attune to" their commuting experience; for example, they report feeling relaxed and content while traveling to work and are more capable than less mindful travelers to cope with potential sources of commute-generated stress and agitation.

Furthermore, mindful cognitive states coordinate and interact with other perceptions and needs (Brown & Ryan, 2003). Relevant here is recent research by Kasser and Sheldon (2009) which suggests that thoughts relating to feeling one has sufficient time to engage in activities that are personally meaningful and growth-promoting, can enhance the salutary effects of mindfulness. Such time-related perceptions represent a construct known as time affluence. Individuals with high degrees of time affluence report abilities to perform tasks in a leisurely manner and to deeply reflect upon life experiences. In addition to time affluence, mindful states have greater probability of expression when psychological needs such as competence, or feelings associated with performing activities with skill and aptitude, are satisfied (Kasser & Sheldon, 2009; Reis, Sheldon, Gable, Roscoe, & Ryan, 2000; Sheldon, Elliot, Kim, & Kasser, 2001). Therefore it is likely that greater levels of time affluence and competence are apt to facilitate increasingly robust expressions of mindfulness. Further, past work indicates that satisfaction across life domains is frequently fortified by greater levels of time affluence (Kasser & Sheldon, 2009), competence, and mindfulness (Ryan, Huta, & Deci, 2008).

Despite the attention given to the affective experiences for car and bus users, there is a paucity of research examining the affective experience of pedestrians and bicyclists. This is important because affective information from pedestrian and bicycle commuters enhances our capacity to predict commuters' mode choices and identify various users' travel decision-making processes. A notable exception is Gatersleben and Uzzell (2007) who found that users of non-motorized commuting modes perceive their commute as more enjoyable and less stressful than those who drive or use public transit. In this study, we examined affective appraisals of non-motorized travelers and determine whether associations between mindfulness and commute attunement are partly mediated by time affluence and commute stress. Based on past research, we posit three hypotheses:

- H1: Users of non-motorized commuting modes such as walking and bicycling report more positive journey-based affect (a composite construct consisting of competence, attunement, and stress) than individuals who typically drive or ride the bus to work.
- H2: Non-motorized commuters have greater mindfulness and time affluence than drivers or bus users (Hypothesis 2).
- H3: Mindfulness is associated with commute-related attunement, both directly and indirectly impact via time affluence, commute-related competence and stress.

The next section of the paper reviews the methods. Then, results and a discussion are presented. Concluding remarks are provided at the end of the paper.

## 2. Methods

### 2.1. Survey instrument

To investigate study hypotheses, a 30-item questionnaire instrument was designed to measure latent constructs of dispositional mindfulness, time affluence, and journey-based affect. The latter construct is further composed of commuting

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