Proenvironmental travel behavior among office workers: A qualitative study of individual and organizational determinants ☆

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ABSTRACT

An analysis of individual and organizational determinants of proenvironmental work-related travel behavior, and their interactions, is presented. Interviews and focus groups were conducted with office workers from four organizations in two Dutch provinces. Environmentally-relevant behavior related to commutes and business trips (i.e. travel frequency, travel mode, teleworking, and teleconferencing) was examined. Evidence from interorganizational comparisons suggests that organizational measures did not have uniform effects on employee behavior which was partially due to differences in attitude and personal income. The salience of social norms pertaining to work-related travel behavior also differed between organizations and organizational subpopulations. Differences in attitudes between employees, however, did correspond to some extent to organizational culture or focus differences at the organizational level. Finally, the results underscore the possibility that similar outcomes at the behavioral level might be the result of different underlying dynamics.

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1. Introduction

Recent modeling research suggests that behavior change needs to play a key role in containing or reducing energy use for transportation (Girod et al., 2013). Fossil fuel use is a main contributor to human-induced carbon dioxide emissions, which aggravate global climate change (IPCC, 2007). For these and other environmental and societal reasons, such as air pollution and traffic jams, promoting more sustainable and energy-efficient travel behavior is of substantial interest.

Although reviews of "soft" transport policy measures, which include behavioral change programs, indicate that these tend to be effective, the mechanisms underlying their effectiveness are under-researched (Cairns et al., 2008; Richter et al., 2010) and the reported magnitude of intervention effects vary greatly (Cairns et al., 2010). Moreover, most reported (non-peer-reviewed) intervention studies lack methodological rigor and are likely to show reporting bias (Moser and

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Bamberg, 2008). In other words, it is still unclear which soft policy measures are truly effective, and if effective, why this is so.

A recent meta-analysis of the psychological determinants of car use showed that social-cognitive variables – as derived from the Theory of Planned Behavior – and habit were good predictors of intention and behavior (Ajzen, 1991; Gardner and Abraham, 2008). However, less is known about how factors external to the individual, such as region and the type of organization at which one is employed, impact on these individual determinants of behavior.

Previous research on travel behavior has mostly examined travel mode choice for private or commuting purposes of individuals within a confined geographical region (Aarts and Dijksterhuis, 2000; Bamberg, 2006; Davidov, 2007; Handy et al., 2005; Van Vugt et al., 1996; Verplanken et al., 2008). Although some have studied residents from diverse geographical locations, regional differences were usually not examined (Steg, 2005; Thogersen, 2006). A notable exception is Bamberg et al.'s study on public transportation use in two distinct urban areas which allowed for exploring the influence of regional contextual factors on psychosocial determinants (Bamberg et al., 2007).

Furthermore, little is known about the role of organizations because many commuting behavior studies almost exclusively focus on individual-level influences (Domarchi et al., 2008; Mann and Abraham, 2006). In fact, compared to household contexts and private individuals, few studies have examined (other) proenvironmental behavior in organizations at the individual, behavioral level of analysis (Abrahamse et al., 2005; Bamberg and Moser, 2007; Bansal and Gao, 2006). Previous research on organizations and the environment has mainly investigated the effects of external determinants and organizational characteristics on organizational engagement with environmental sustainability (Etzion, 2007). In a recent review, a systematic analysis of interactions between the individual employee and the organization was found to be lacking in empirical research (Lo et al., 2012b). This is in sharp contrast with the substantial proportion of soft policy measures that have been initiated through the workplace (Cairns et al., 2008; Kearney and De Young, 1995–1996). More behavioral travel research in workplace intervention contexts is needed to ensure a better application of theory in policy and practice.

Finally, the environmental impact of transportation is not confined to travel mode choice for commuting purposes. Within the organizational context, relatively little research has examined the determinants of other work-related travel behavior such as business trip frequency, and more sustainable behavioral alternatives to traveling like teleworking and teleconferencing (Aguilera, 2008; Kearney and De Young, 1995–1996; Moos et al., 2006; Toffel and Horvath, 2004). For instance, a review of telework research concluded that employees' motivations for teleworking remained unclear, and research on organizational level influences was called for (Bailey and Kurland, 2002). In order to maximize the effectiveness of organizational interventions, it can be insightful to study the whole array of work-related travel behaviors. One benefit of examining various behaviors in one study is that their relative potential for change can be compared while keeping organizational context constant.

The current paper aims to address the above-mentioned research gaps by analyzing individual and organizational determinants of work-related travel behavior among office workers in four organizations with different organizational foci from two distinct regions in the Netherlands. Where appropriate, we will further investigate interactions between the individual and the organizational influences. Topics of interest include commuting travel mode choice and frequency, national and international business trip travel mode choice and frequency, teleworking, and teleconferencing.

1.1. Individual determinants

Individual determinants are defined as determinants of a psychosocial nature that are relevant on the individual level. We chose to employ a framework – similar to the one used in Gardner and Abraham's (2008) meta-analysis – which only contained general theoretical concepts that are commonly used to explain a wide range of social behaviors. Research has not established the superiority of more domain-specific theories such as Stern's Value-Belief-Norm Theory (Kaiser et al., 2005; Stern et al., 1999). Thus, we have included social-cognitive variables (i.e. attitudes; subjective norms; self-efficacy) and habit in our framework for individual determinants:

"Attitudes" are an individual's overall evaluation of a behavior (Eagly and Chaiken, 1993). In the specific context of travel mode choice, it is important to note that attitudes towards behavioral alternatives may also significantly influence one's choice (Gardner and Abraham, 2010). Several subcomponents of attitudes can be distinguished. One distinction is that between instrumental and experiential aspects of attitudes (Fishbein and Ajzen, 2010). The former is connected to the outcome of a behavior while the latter is linked to the experience of engaging in a behavior. For certain categories of social behavior, it is also useful to emphasize the role of an individual's moral evaluation of a behavior. The moral component is often referred to as the "personal norm" or "moral norm" (Kaiser, 2006; Parker et al., 1995).

In contrast to attitudes, the influences of *other* people on the individual are reflected in "perceived norms", which are defined as the perception of other people's evaluation of a behavior. A useful distinction is that between injunctive norms, which concern others' approval/disapproval of one's own behavior, and descriptive norms, which refer to others' behavior (Schultz et al., 2007).

Another social-cognitive component related to the individual in question is "self-efficacy", which refers to a person's evaluation of whether one has the necessary resources, knowledge and/or skills to attain a goal (Bandura, 1997), or more narrowly conceived, to perform a behavior (Ajzen, 1991). Evidently, perceptions of control are linked to objective external circumstances. In the context of commuting behavior, for instance, it is clear that travel mode options are influenced by the individual's commuting distance and the regional infrastructural constraints.

For social-cognitive variables to play a role in behavior, it should be possible to (partially) control the behavior on a volitional basis (Fishbein and Ajzen, 2010). Furthermore, awareness of its personal, social, or environmental relevance is also a prerequisite. When a behavior is repeatedly performed, it no longer requires deliberative evaluation which has led many to argue that it has become a "habit", which is characterized by a degree of automaticity and unconsciousness (Fishbein and Ajzen, 2010; Verplanken and Orbell, 2003). In this phase, contextual cues like time and place may play a more salient role in determining behavior than social-cognitive variables (Wood et al., 2005).

1.2. Organizational determinants

Organizational determinants are defined as those influences on behavior specific to the organizational context. According to Tudor and colleagues, who presented a framework of factors influencing proenvironmental (management) behavior, five organizational determinants are of relevance: organizational focus, organizational structure, organizational/site type and size, departmental type and size, and organizational culture (Tudor et al., 2008). Although Tudor and colleagues outlined a framework, we believe it to consist mainly of *indirect* determinants of behavior or determinants which may be too broad to be meaningful. Organizational size, for instance, can be hypothesized to affect the degree of interaction between organizational members and therefore *indirectly* influence the salience of subjective norms regarding proenvironmental behavior. Nevertheless, Tudor et al.'s proposed framework provides a tool for the search of organizational characteristics directly related to proenvironmental behavior. Of the factors included in their framework, organizational focus and organizational culture may be the ones that most straightforwardly affect individual determinants.

Organizational focus, defined as the primary aim of an organization, may be directly related to proenvironmental behavior in the sense that it sets the priorities at the organizational level which may or may not be aligned with environmental sustainability. In the present study, we employed variations in organizational focus to further explore its possible impact on (individual determinants of) work-related travel behavior.

Organizational culture comprises those elements that are shared by organizational members. It could indeed be seen as a broader concept which includes, or is at least interlinked with, organizational focus (Tudor et al., 2008). In Schein's model of organizational culture, organizations can be understood on three levels (Schein, 1992). The first level is that of artifacts, which are tangible and explicit, e.g. physical facilities like parking spaces and formal organizational policies. The second level is that of values, which are intangible but (partially) explicit. Examples are informal rules, and perceived values and ideal types. The third level of basic assumptions are intangible and taken for granted, such as unwritten norms. In our study, we will mainly focus on the distinction between the formal level, that of artifacts, and the informal level, that of values and basic assumptions.

Another consideration to take into account are the different roles organizational members play within organizations. Three types of distinctions are relevant. Firstly, previous research found that top and middle management play a distinctive and important role in organizational proenvironmental behavior through their views, policy decisions, and behavior towards employees (Ramus and Steger, 2000; Siero et al., 1989; Tudor et al., 2007). Indeed, the specific role of managers in organizational environmental practices has relatively often been studied interorganizationally (Branzei et al., 2004; Fineman, 1996; Sharma, 2000). Secondly, employees with specific job responsibilities, such as human resource managers responsible for compensation of travel expenses and environmental coordinators, evidently have a distinct function. Their views on policy measures, the organization, and the compatibility between the two, can have a comparatively large impact. These have thus been a research focus in studies on proenvironmental behavior in organizations (Egmond et al., 2006; Vermeulen and Hovens, 2006; Völlink et al., 2002). Thirdly, all other employees, or "general employees", have a direct influence through their daily travel-related choices, and indirectly through the possibilities and constraints they impose on management and key actors. To the best of our knowledge, there are no comparative, interorganizational analyses of the relationship between organizational determinants and employee proenvironmental behavior (Lo et al., 2012b). In other words, there is a lack of research on proenvironmental behavior of general employees in organizations.

1.3. Implications for current research

To conclude, it was possible to establish a general conceptual framework of individual determinants that may play a role in work-related travel behavior from previous research on proenvironmental behavior. However, the existing literature did not provide sufficient tools for the construction of a solid framework for organizational determinants that *directly* affect (individual determinants of) proenvironmental behavior. Given this lack of knowledge, we considered qualitative research methods most appropriate for examining individual and organizational determinants as well as the interactions between these influences because fewer constraints would be imposed on exploring possible relevant organizational influences.

We will first identify salient individual and organizational determinants, and the interactions thereof for each behavior of interest. Since we assume that the organization influences the employees' behavior – at least to a large extent – through relevant individual determinants, we will also discuss how each of the above-outlined individual determinants may be influenced by the organizational context. We will identify both similarities and contrasts between organizations and subpopulations within organizations, but focus on contrasts as these will tell us more about how organizational determinants may influence employees or vice versa.

2. Methods

We conducted a qualitative exploratory study in four Dutch organizations as part of a wider research project on energy-related behavior of office workers (Lo et al., 2012a). Ethical approval was obtained from the faculty's standing ethical committee before data collection. Interviews were conducted in Dutch by the first author between December 2008 and November 2009. We primarily conducted semi-structured interviews. In addition, we had at least one focus group in each participating organization for the purposes of observing group members commenting on each other's assertions. It was an opportunity for relevant issues to be raised or (critical) questions to be posed that the interviewer – as an outsider to the organization – had not foreseen.

2.1. Sample characteristics and recruitment

Interviewees roughly fell into two groups: "key informants", who fulfilled a special role in the organizations' energy use (e.g. facility managers or environmental policy coordinators), and "general employees" or "office workers" (i.e. all other office workers).

We approached organizations with the request to take part in the research project, promising participating organizations a report of the anonymized, general results. A key informant in each organization served as a contact person. Contact persons identified other key informants, and invited a representative sample of general employees. We recruited a total of four organizations with offices located in the Dutch provinces of Zuid-Holland (ZH) and Limburg (LB). The two regions were selected because of their differences in population density and possibly culture, with Zuid-Holland being the more urbanized region. Two commercial companies (company ZH; company LB), a university (LB), and a non-profit organization (ZH) participated. All organizations had some form of public commitment to environmental sustainability, but none had energy conservation as their primary organizational aim. Both companies were multinational companies and geographically dispersed within the Netherlands. Each company participated in the study with employees from one office building (i.e. one location) only. Employees from Company ZH included in this study were predominantly focused on the domestic market and mainly traveled within the Netherlands and neighboring Belgium. The geographical reach of company LB's employee activities varied widely between participating employees, ranging from domestic to intercontinental travel. The NGO also participated with one office building, but contrary to the companies, the vast majority of its employees were based in one location, i.e. the participating office building. However, the core activity of the NGO, international development aid, implied that many of its employees were involved in overseas activities. The university was the only organization that participated with three office buildings, although all three buildings (and the whole university) were located in the same city.

2.2. Procedure

At each organization, 4–5 informal interviews were conducted with key informants, with a total of 18 interviews. We informed them that we were interested in organization-specific background information and their views about organizational energy use so that we could identify suitable questions for the interviews with general employees. We also requested key informants to provide additional documentation (e.g. policy documents, internal communication materials, and press articles). In addition, a few key informants were also contacted by phone and e-mail for specific information.

Following the interviews with key informants, 6–9 individual semi-structured interviews of 45–75 min were conducted at each organization, with a total of 33 individual interviews. In addition, 1–3 focus groups of 90–120 min, each consisting of 4–8 participants, were conducted at each organization, with a total of 6 focus groups and 31 participants. Before the interview, participants received oral and written information concerning the research aim, data confidentiality, and the voluntary nature of their participation. Following this, they were requested to sign informed consent and asked permission for recording the conversation.

2.3. Interview topics

Interviews with key informants served to gather information about the organization in general, and energy use more specifically. Topics relevant to work-related travel included commuting (frequency and travel mode), business trips (frequency and travel mode), teleworking and teleconferencing. In addition, key informants were asked more generally about their views on determinants of and opportunities for energy conservation and reducing the environmental impact of work-related travel in their organization.

Interviews with general employees were solely concerned with their views on facilitators and barriers to and opportunities for energy conservation and proenvironmental work-related travel behavior. We first asked open-ended general questions about energy use and conservation which were followed by questions about work-related energy use and travel.[1]

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[1] Typical questions included: What do you think of [X]? What are factors that can increase or reduce [X]? How can [X] be increased or reduced? What are the advantages and disadvantages of using these strategies? What do you think of colleagues who do [X]? Do you talk about [X] with people at work? Do others comment on the fact that a person does not do [X]? Do you have objections against measures that were taken in the past or are taken centrally (i.e. by the organization)?

Table 1
Illustrations of salient interorganizational and intraorganizational contrasts.

No.	Behavioral category	Relevant determinant	Sample quotations	Contrasting sample quotations
1	Commuting travel mode choice	Social norm	"In our department everyone has a car and it's a hot topic, and according to me it is one, status, two what kind of a car freak you are. Car freaks take the car they wanted for years. Managers simply take the big fat car because it comes along with the status and it's an inhibiting factor" (E, male employee company ZH)	"*Question: How do you come to work?* R: car. S: bike. T: scooter. U: car. V: bike. … R: it's too far for me to cycle... U: I could also commute by bike but then I need a shower here where I can freshen up … V: …I think who cares if I arrive all sweaty…" (focus group university LB)
2	Business travel mode choice	Managerial status/personal income → attitude	"If I'm going by train tomorrow, for example, to Amsterdam, and the office is walking distance from the train station, I would consider it. Only if it's convenient… the only thing is that it costs me extra money that I cannot get reimbursed because I have a company car." (H, male manager at company ZH)	"I find it rather pleasant, even if it's just for taking some stuff to read… Yeah, it's really like that…I'd really like to take the train…but the car is free, because it is a company car, and I have to pay for the train." (E, male employee at company ZH)
3		Attitude	"It depends, I like to travel by train if the place I have to go to is close to the station, but if I have to get to the train station first, then take a bus or taxi, then I prefer to drive…public transport [including taxi] is reimbursed… the car is also reimbursed, by the way" (C, manager at company LB)	"I'm under the impression that in NGO ZH the car is used very little. That's because there's very few parking spaces available… Moreover, for business travel, the reimbursement of car expenses is less than for the train" (L, male employee at NGO ZH)
4		Attitude Social norm	"London…I travel by plane…the train…all in all it takes longer than the plane, even if you consider checking in etc." (I, company ZH)	"They said at the other NGO that you can no longer fly to close-distance destinations, to England they have to take the train…I would agree with such a measure" (M, female employee at NGO ZH)
5		Attitude/ personal norm	"I think it's difficult to reduce [international air travel]… the number of trips is already limited… to save on that would be at the expense of the quality of our work and that's not worth it…" (N, female employee at NGO ZH)	"Compared to other NGOs…if you were at the marketing department there, you hardly ever traveled, so we're quite lenient… over the years we have come to travel more frequently…the question is not whether we should travel at all… but I have the feeling we don't think critically enough whether a trip is really necessary…" (O, female employee at NGO ZH)
6	Teleworking	Attitude	"…being flexible with working at home… I think NGO ZH could handle it differently. Officially we are very strict and old-fashioned in this matter. But in practice it does happen." (J, female employee at NGO ZH)	"yes [we are allowed to work at home]… [we work at home] sometimes. It depends on what you're doing, look, you do it because it's more useful, because you can concentrate [better]…" (D, male employee at company LB)
7	Business travel frequency	Managerial control	"travel has been restricted…at the moment you need to ask permission for overseas flights" (W, female employee at company LB)	"I have to see my clients face-to-face 300 times a year. Sometimes I literally go for a visit while I think by myself I could have dealt with it over the phone. I go there by car because I need to tick the box" (E, male employee at company ZH)

2.4. Data analysis

All interviews were recorded with a digital recorder and transcribed verbatim. Before coding and analyzing the data, we first compared the interview data with the (small amount of) focus group data. As no apparent differences were found, we decided to analyze all transcripts in a similar fashion.

We conducted a thematic analysis. Of all qualitative analysis forms, it is the most basic one because it is essentially a tool for data reduction by means of coding from which salient themes at different levels are subsequently abstracted (Attride-Stirling, 2001). Qualitative research software (QSR NVivo 8) was used to facilitate coding and analysis. The software allows the researcher to tag one or multiple "codes" to segments of the transcripts. Once the text has been coded, the researcher can search for (combinations of) codes and retrieve relevant segments from the transcripts. First, we divided the transcripts into text fragments based on the travel behavior categories. Travel mode choice was the first category, which was further sub-categorized into commuting mode choice, and business travel mode choice. Business travel, in turn, was subdivided into national, European, and international business travel. Travel frequency was the second category, again with commuting and business travel as its main subcategories. We also had subcategories for teleworking and teleconferencing as alternatives to physical commutes and business trips. Second, we identified facilitators, barriers, change potentials, and change strategies for work-related travel behavior. Simultaneously, we coded each of these factors under theoretical individual determinants where applicable. Following this, we identified the salient determinants for each specific travel behavior category. Third, we

coded all fragments with organization-individual interactions. More precisely, we coded all instances where it was evident that the organization influenced (individual determinants of) behavior, or vice versa, the employee(s) influenced an organizational determinant or the outcome at the organizational level.

3. Results and discussion

We will first describe themes common to all organizations and all or a large majority of employees, but will subsequently focus on analyzing salient contrasts between organizations and individuals. Table 1 presents illustrations of salient contrasts between organizations or organizational subpopulations, whereas Table 2 shows examples of contrasts between individuals or within an individual.

3.1. Themes common to all work-related travel behavior

3.1.1. Awareness

In general, office workers were well-aware of the relative environmental impact of their travel behavior. Furthermore, thanks to the fact that most organizational policies and regulations had visible, practical or financial consequences for their employees, office workers tended to be well-informed about these even if they did not consider them environmental policies as such. Not only did employees say they knew about such policies and regulations, but their description of the situation was remarkably consistent with information obtained from key informants. A marginal exception was awareness of the full range of transport alternatives. Employees did not always explore all possibilities for new travel destinations or novel alternatives for familiar routes.

3.1.2. Attitudes

Personal environmental concern did not seem to be a strong determinant of travel choices. In fact, interviewees tended to emphasize other motivations even if they chose for the environment-friendlier option. Perceived infrastructural constraints, organizational influences, and non-environmental personal and work-related considerations, were more important influences on employees' overall evaluation of travel-related choices. All these factors could roughly be related to three dominant themes, namely time and efficiency, personal comfort, and job-related, organizational and financial constraints. Office workers assessed both the relative impact of travel choices on these three factors, and the importance attributed to either one of them, differently (see Table 2, No. 10, 11, 12). Consequently, general attitude towards environmentally-conscious travel behavior varied widely among office workers.

Table 2
Illustrations of Salient Interindividual and Intraindividual Contrasts.

No.	Behavioral category	Relevant determinant	Sample quotations	Contrasting sample quotations
8	Travel mode choice vs. travel frequency	Attitude	"Commuting by train would cost me too much time…[it would take] half an hour longer than by car…" (A, male employee at company LB)	"Working at home can be of added value…you can do things that in the office you would get disturbed too often for…[commuting time] is at least in my personal consideration rarely a factor that plays a role… [I commute] 1,5 to 2 hours a day…" (A, male employee at company LB)
9	Commuting travel mode choice vs. business travel mode choice	Attitude vs. social norm	"…I still always commute by car. Well, I could come to work much more cheaply [by train]…" (P, male employee at university LB)	Yes [traveling by train] if it is for a business trip, yes, yes, yes, absolutely…it was more or less imposed…" (P, male employee at university LB)
10	Commuting travel mode choice	Attitude	"[I like the train] a lot. Yes, even more so because, one, I think it's relatively relaxing, and two… reading things in advance…e-mails… I do all those things in the train…I love it. And while driving a car you can obviously not do that." (F, male employee at company ZH)	"I go home after the traffic jams…But I think calling in the train, well, I think, for calling the car is a lot easier. And then I can also spend my time in a useful way…" (G, male employee at company ZH)
11	Travel mode choice	Attitude vs. organizational policy	"I find it rather pleasant, even if it's just for taking some stuff to read… Yeah, it's really like that…I'd really like to take the train…but the car is free, because it is a company car, and I have to pay for the train." (E, male employee at company ZH)	"[I commute] by car… with public transport it would take me… longer…Besides, it's much more pleasant because you're a lot more flexible…I have my own car and it's partially reimbursed…" Q: "the train is fully reimbursed?" "Yes that's right." (B, male employee at company LB)
12	Business travel frequency	Attitude	"…I have traveled around for two years. I've had enough of it" (H, male employee at company ZH)	"…if you travel once a year, it's rather nice… a fair is also an outing for many people" (Q, male employee at university LB)

3.1.3. Social norms

Interviewees generally did not acknowledge an influence of social norms on their own travel behavior. Nevertheless, most employees were conscious of the descriptive social norms regarding travel behavior. In contrast to the role of other organizational members in general, superiors' preferences were acknowledged to influence, and in some case even dictate, whether and how employees commuted and made business trips (see Table 1 No.7).

3.1.4. Self-efficacy

(Perceived) ability to perform the relevant behavior per se appeared largely irrelevant (except for using teleconference facilities), but the extent to which office workers felt they could cope with constraints imposed by external factors such as infrastructure, demands of clients, and organizational facilities and policies was important. Especially the impact of societal trends and infrastructure was often argued to determine which options were viable. The second salient theme was the extent to which travel behavior was perceived to affect control over work efficiency and quality.

3.1.5. Habit

The role of habits in travel behavior was rarely discussed extensively by office workers. Although they would acknowledge a certain behavior had become habitual, they mainly discussed the reasons for this. In fact, small-scale interventions were rarely perceived to have the potential to change travel-related habits. This supports a previously reported finding that lack of awareness or unconscious habits are not a major obstacle to energy-efficient travel behavior (Bamberg et al., 2003). Nevertheless, it was apparent that habit may influence the perceived relevance of travel-related beliefs. For example, interviewees whose living or working circumstances had altered and who consequently adapted their travel habits, evaluated the attractiveness of alternatives differently when they returned to the original (or almost equivalent) circumstances.

3.2. Travel mode choice

3.2.1. Travel mode choice for commuting purposes

Travel mode options are obviously restrained by the distance between home and work. Office workers living nearby have the widest range of options to choose from: they can go to work by car, public transport, bicycle, or on foot. For employees living slightly further away walking is not a viable option anymore, and those living far way could not even cycle. Another obvious external constraint is the regional infrastructure. It is generally known that traffic jams are more common and public transport more extensively-developed in Zuid-Holland than in Limburg.

However, even bearing distance and regional differences in mind, other individual and organizational differences still accounted for substantial variation in travel mode for commuting purposes. On the individual level, personal preferences, family responsibilities, but also work habits and job requirements influenced commuting behavior. In general, employees who brought young children to school and who made frequent trips for work during the day were more likely to drive because the car is perceived as a quicker and more flexible transportation mode. However, office workers also differed substantially in the importance they attached to a particular attribute of a travel mode or consequence of a behavior. Public transport users were generally of the opinion that not having to pay attention to traffic was a major advantage of public transport, whereas car drivers enjoyed their privacy. Train riders preferred having the opportunity to read and work on their laptop during their commute, whereas car drivers often used their commute to make phone calls (see Table 2 No. 10). Furthermore, time and comfort was often not of equal importance to the same individual across the range of relevant behaviors (see Table 2 No. 8).

At the organizational level, policies and facilities mainly influenced commuting preferences through financial incentives. All organizations (partially) compensated for commuting costs. The most important differences were parking restrictions imposed by the Zuid-Holland organizations (and to a lesser extent by university LB), and the provision of company cars by both companies. Few interviewees commuted by car if they had no access to free parking. Company car drivers were not compensated for commuting costs if they travelled by other means so few considered alternative transportation, although some walked or cycled to work when the weather was nice. Norms regarding company cars were also relevant to the companies. Some company employees implied that there was a negative social norm towards energy-efficient cars because colleagues, especially managers, were perceived to value big cars and oppose environmentally-inspired restrictions on the range of cars one could choose from (see Table 1 No. 1). Another related claim was that company cars were part of employment terms, rendering employee choice restriction inappropriate.

Finally, one level of determinants was often found to dominate over the other. The impact of organizational influences could be such that opposite individual preferences had no effect on behavior or vice versa (see Table 2 No. 11). This suggests it is crucial to examine the relative strength of both levels of determinants.

3.2.2. Travel mode choice for business trips

Similar to commutes, time, comfort, and personal work habits were perceived to have a significant influence on travel mode choice for business trips. Combining visits to different national or equidistant foreign destinations was a common reason for traveling by car because it was perceived to increase flexibility and reduce travel duration.

For employees of company ZH, financial incentives also mattered. Those who had a company car were not compensated for public transport costs made for business trips. Nevertheless, some managers still opted for public transport when it was faster or more convenient for them. Lower-level employees were more deterred by the costs they personally would incur.

Thus, financial disincentives may have a selective impact on employee travel choices for business trips (see Table 1 No. 2). Interestingly, positive incentives may have a similarly selective effect. In the case of company LB, business trips made by first class public transport were fully reimbursed, but this did not seem to be linked to higher rates of public transport use. Employees claimed they were only traveling by train if they perceived it to be quicker and more comfortable, possibly because car use was also compensated for (see Table 1 No. 3). Arguably, only a sound combination of financial incentives for public transport and disincentives for car use would lead to more consistent results, which was the case at the NGO. However, it is possible and even highly probable that NGO employees were generally more inclined to use public transport than company employees.

In addition, business trips were more influenced by organizational social norms than were commutes. For example, at university LB and company LB, some employees, who commuted by car, traveled by train for business trips because they thought they were supposed to. However, others at the same organizations still made frequent business trips by car. Thus, informal norms rather than strict formal rules, influenced the train riders (see Table 2 No. 9).

Time and work habits also played a prominent role in travel mode choice for international business trips. Although it was is possible to travel by train to European destinations, it was generally only chosen if travel time was not perceived to be longer compared to flying (see Table 1 No. 4). Sometimes increased opportunity to work during travel time was considered in the cost-benefit analysis. The only exceptions were NGO employees who were to some extent willing to travel longer by train. Their organizational focus seemed to influence their attitude, because they referred to other NGOs who had already implemented policies regarding train travel for European destinations. An additional obstacle perceived by some university employees, who had a limited personal travel budget, were the higher costs of train tickets.

3.3. Travel frequency

The number of national and international business trips varied greatly depending on individual-specific job profiles, the organizational focus, and geographical spread of the organization.

Although office workers often used travel time for work, time loss was still considered a major disadvantage of traveling. Paradoxically, for business trips made within the Netherlands or border regions, time loss was a more salient consideration than for more distant foreign destinations. This was partially due to the higher number of trips most employees made to national or equidistant destinations. Another reason was that more short-distance trips could be substituted by communication via telephone, e-mail or teleconference because many are made solely for relatively short discussions. Finally, there were fewer personal motivations for making national trips. In contrast, some who traveled to distant destinations enjoyed the opportunity to visit a foreign country. For example, at the university, it was common to combine a work-related trip with a holiday.

An employees' average travel frequency was negatively related to experiential attitudes (see Table 2 No. 12). In addition to time loss, frequent travelers also considered the high financial costs (especially of international trips) and work-life balance issues to be disadvantageous. Nevertheless, experiential attitudes towards business trips were not perceived as the dominant personal driver for making international trips. The most important explicit motivation was conducting work-related tasks that required physical presence. Especially the NGO employees indicated that intercontinental trips usually lasted for weeks and included many activities other than formal meetings. Company employees who did travel internationally for business meetings only, indicated that these tended to last for days. Furthermore, at the time of the interviews, they indicated that their companies had reduced international travel budgets due to the economic crisis. However, some employees also noted that not all work-related purposes were equally important and colleagues were occasionally accused of traveling more than necessary. Overall, it was concluded that the question was not whether one should travel but how often.

For the NGO, its organizational focus, development aid, had strongly conflicting normative influences on international travel (see Table 1 No. 5). On the one hand, development aid was increasingly perceived as related to environmental issues because climate change had become a pressing issue in the countries where they operated. On the other hand, relatively frequent intercontinental air travel was considered crucial to the proper execution of their core task.

3.3.1. Teleconferencing

Teleconference facilities were defined as all modern communication facilities except for phone and e-mail. There was a broad consensus among office workers that teleconference facilities had the potential to improve work quality by providing a better alternative to the phone or reducing travel frequency. Teleconferencing was sometimes seen to improve work because of superior sound quality, less prohibitive costs compared to international phone calls, and increased speed of communication thanks to images. Perceived potential for reducing the number of trips seemed to be largely dependent on current travel frequency. However, interviewees also agreed teleconferencing should be complementary to physical contact. Travel would remain necessary or at least desirable, but teleconferencing could reduce its frequency or improve work quality.

Familiarity, trust, limited length of a session, and moderate complexity of the subject matter were often stated as necessary conditions for teleconferencing. Most office workers who had experience with teleconferencing claimed it was necessary to have met contacts in real life or that it worked best with people they knew well. A few disagreed but did believe that physical contact is needed when trust-related issues are involved. In addition, others pointed out that teleconferencing required novel technical and social skills.

Technical complexity was also the reason why facilities like conference calls and Skype were in higher demand than videoconference, which is more complex to operate. Therefore, most perceived videoconference only to have added value when discussions were relatively complex and visual images needed to be presented.

At the time of the interviews, all organizations were still in the process of expanding and/or piloting teleconference facilities. Many employees believed that they could use teleconference more intensively in future. Some still had no or limited access to the facilities they would want to use. An equally decisive, current obstacle was external contacts' lack of access to facilities.

3.3.2. Teleworking

Teleworking was defined as working elsewhere, usually from home. Advocates of teleworking could be purely motivated by work-related advantages but also by the desire to combine work and private life. Work-related reasons were the need for a quiet environment to work efficiently, reduction of travel time on days one is making business trips, and better equipment for work-related tasks at home. Private reasons were combining child care with work and reducing overall commuting time. Although some noted that teleworking would be beneficial to the environment, no one claimed it was the primary reason for them personally to telework. Overall, interviewees were in favor of the possibility to telework, although organizational differences were apparent. The NGO employees were most positive about working from home. Company employees tended to mention the need to be present for colleagues, superiors or clients, whereas some university employees expressed the fear of losing work-life balance if teleworking were to be introduced more structurally.

In all four organizations, there were some employees who teleworked on a sporadic or regular basis. There were no general, well-known organizational policies, except at the NGO where employees knew that the official policy forbade regular teleworking. In practice, teleworking in all organizations depended on one's direct superior's approval and adequate facilities to telework (e.g. ability to log on to the organizational server from home), which replicates previous research findings (Bailey and Kurland, 2002). Some claimed that managerial disapproval was associated with distrust of employees and the manager's age.

These findings are consistent with other teleworking studies (Wilton et al., 2011). It was evident that the interaction between organizational approval and employee attitude towards telework determine whether and how often people teleworked. In addition, interorganizational comparison showed that rather similar outcomes could be the result of different individual–organization interactions. In the NGO, employees held very positive attitudes towards teleworking but were constrained by restrictive organizational policies, whereas in company LB there were be not limiting policies, but there was also less enthusiasm for telework (Table 1 No. 6).

4. General discussion

4.1. Common themes

Despite the wide range of organizational foci, employees from the participating organizations were found to share various similarities. To a large extent, this is not surprising considering that all employees were influenced by external factors at the national level.

Changeability of travel mode was perceived to be relatively low irrespective of the individual's preferred mode of travel. Employees were often convinced that their travel habits reflected the optimal choice for them. Attitudes and beliefs towards car and train use varied substantially, despite the fact that time and comfort played a decisive role for most employees. This finding may not be surprising as previous studies have found travel mode change to be a high-cost behavior (Kaiser and Schultz, 2009). In contrast, the potential for teleworking and teleconferencing was perceived to be relatively high. Although employees saw the limitations of these practices, most believed that they had potential to increase work efficiency and quality in the future. Another important, but largely implicit theme was that the definition of "necessary travel" was highly subjective. Although employees frequently believed that work-related trips were necessary or at least desirable, no common criterion to evaluate necessity or desirability emerged. Finally, the present study showed that the psychosocial framework of individual determinants was applicable to all organizations examined and useful to understand individual- and organizational-level similarities and differences as well as individual–organization dynamics.

4.2. Salient individual–organization interactions

Where similarities between organizations showed in which respects specific individual–organizational interactions were largely irrelevant, differences between organizations illustrated the diverging effects these interactions could have on work-related travel behavior.

First, organizational financial incentives (and their formal organizational policies) did not have uniform effects on employee choices which could partially be explained by differences in personal income and attitude strength. The effects of non-financial organizational policies and guidelines also interacted with attitudes. Similar to conclusions from previous qualitative research, this implies that determining the relative strength of individual and organizational determinants is

paramount to understanding travel behavior; very strong (dis)incentives on either the personal or organizational level can render determinants at the other level irrelevant to the behavioral outcome (Mann and Abraham, 2006).

Second, individual differences between employees were found, to some extent, to correspond to organizational culture or focus differences at the organizational level. For instance, differences in organizational focus were related to tolerance of time loss and travel frequency. Time efficiency of a transport mode was considered more important among company employees than among NGO employees. This also raises the issue of determining cause and effect when analyzing the interaction between individual and organizational determinants. The organizational focus, and geographical spread of the organization obviously also affected travel frequency and travel destinations of employees. Frequency, in turn, was negatively related to employees' attitude towards business trips. Thus, organizational policies aimed at minimizing the number of trips may have diverging effects depending on employees' individual travel frequency. The less employees travel, the less effect organizational measures might have. Generalizing to the organizational level, it implies that organizations with generally higher travel frequency might see larger effects for the same measures.

Third, the salience of social norms pertaining to work-related travel behavior differs between organizations and organizational subpopulations. In general, social norms and managerial control were more important in determining business travel frequency and mode choice than commuting travel mode choice. Having said that, social norms also played a salient role in commuting travel mode choice if many company employees had a company car.

Finally, the results underscore the possibility that similar outcomes at the behavioral level might be the result of different underlying dynamics. For example, employees of one organization may hold a favorable attitude towards teleworking while the organization has a restrictive policy, whereas employees of another organization hold a less positive attitude but are less restricted by organizational policy. The same can be true for individuals who behave similarly – they may not be motivated by the same reasons. Recent research also suggests that the impact of objective features on different individuals' trip satisfaction varies substantially (Manaugh and El-Geneidy, 2013). Future quantitative research should considering using mediation, moderator and subgroup analysis to further examine the dynamics underlying the effect of interventions on behavior and interactions between individual characteristics and intervention effectiveness.

4.3. Limitations

Despite the fact that organizations in two distinct regions in the Netherlands were sampled, some shared external influences existed. Most obviously, all organizations partially shared the same infrastructure for long-distance travel which limited the (desired) variability in our sample. Related to this, was the choice to focus on individual–organizational interactions that led to a neglect of influences on the regional, national or global level, and within-organization interactions such as between formal and informal organizational aspects.

With regard to the methodology used, it should be noted that there were too few focus groups to thoroughly examine group dynamics, which one would expect to play a role in how the organizational context influences individual behavior. Furthermore, the dynamics between individual and organizational determinants over time were left relatively unexplored. It is for this reason we could not shed light on the nature of some individual–organization correspondences. Although some evidence can be derived from cross-sectional interview data, comparisons over time are methodologically superior and may lead to better insights into individual–organization dynamics. Another limitation was that precise and objective information on relevant organizational determinants, and overall organizational performance with respect to travel energy use was often not available. It was therefore difficult to determine to what extent differences in formal and informal organizational features actually affected work-related travel behavior. Further research is needed to rigorously examine organizational-level factors (e.g. organizational culture, financial incentives) that the present study suggests play a role in employee travel behavior.

4.4. Implications for interventions

Our findings have several implications for interventions. Overall, the present findings underscore the importance of a thorough understanding of behavioral determinants to ensure consistent effectiveness of interventions.

More specifically, the results suggest that measures other than general information and/or small to medium financial incentives may be needed for changing employee travel mode substantially because the changeability of (attitude towards) travel modes was perceived to be low (Jakobsson et al., 2002; Kearney and De Young, 1995–1996). This is especially true for commuting travel mode but to a lesser extent for business travel mode because the latter is more easily influenced by organizational norms and managerial control. In contrast, teleworking and teleconferencing have the potential to reduce travel frequency with voluntary employee cooperation because they may be compatible or increase work efficiency and life quality. On a cautionary note, these are relatively novel practices which may require skills-training and substantial organizational adaption before they are successfully employed.

We have also shown that the outcome of interactions between the individual on the one hand, and norms, organizational financial incentives and other organizational policies on the other hand, are highly variable. It is therefore imperative to gauge, in the specific context of interest, the relative strength of obstacles on the individual, organizational, and societal level in order to determine appropriate interventions. individual–organization interactions that likely result from certain organizational characteristics – some of which we have described in this paper – may guide intervention planners in their search

for relevant influences in the organization of interest. It is also important for intervention planners not to assume that organizations with similar baseline levels of work-related travel behavior, also share the same determinants and change potential. In our paper, we have described instances where this was not the case, and any attempt to apply the same formula in both organizations would likely have led to mixed results.

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