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Importance of motives, self-efficacy, social support and satisfaction with travel for behavior change during travel intervention programs

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**Abstract**

The present field study investigates the reduction of car use through a voluntary travel behavior intervention program that provides participants with temporary free public transportation. Three factors – self-efficacy, social support and satisfaction – have previously been shown to be important for behavior change during physical activity intervention programs. In travel behavior interventions, however, these factors have often been studied individually and less is known about their combined effects on travel behavior change. Furthermore, while motives for participating in travel behavior interventions have been frequently studied within travel behavior interventions research, there is a lack of studies investigating the influence of motives on travel behavior change. To better understand the importance of different motives as well as the importance of self-efficacy, social support, and satisfaction with travel behavior change, a series of surveys were administered to 181 participants before, during, and after their participation in a voluntary travel behavior intervention. The results show that greater self-efficacy and social support during the intervention led to greater travel behavior change. These results indicate that in order to gain better results from travel behavior interventions, individuals should be helped to increase their travel-related self-efficacy, and significant others should be involved to provide social support. We discuss possible ways of accomplishing this.

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1. Introduction

In the last few decades, research on behavior change related to environment and health has been dominated by studies of traffic congestion, pollution reduction, recycling, energy and water conservation, obesity management, physical activity promotion, and smoking cessation (Darnton, 2008). Voluntary interventions have been used to help people make behavior changes. The intervention-program approach attempts to make people try a new, target behavior during the intervention.

Motivation is required in order to voluntarily engage in an intervention program. Previous research on motives for engaging in pro-environmental behaviors (such as recycling) shows that social and moral motives, or norms and self-image, are involved (Halvorsen, 2008). In the present field study, the target behavior of the intervention program was utilizing public transportation instead of car use. The travel behavior change intervention was divided into two phases: the pre-intervention phase and the intervention phase. During the pre-intervention phase, we investigated the importance of...
different motives for travel behavior change. Motives for participating in travel behavior interventions have previously been studied in terms of reasons for participating (Halperr et al., 2003; Lakerveld et al., 2008), reasons for not participating (Lakerveld et al., 2008), and reasons for not changing behavior due to participation (Skarin, Olsson, Roos, & Friman, 2017). However, further research on the relationship between motives for participating in travel behavior interventions and their effect on travel behavior change is needed and is therefore included in the current study. The motives for participating in the present intervention were chosen from a set of motives drawn from previous research on travel behavior intervention motives (see, for instance, Skarin et al., 2017); examples include a desire to change behavior, to save money or to act in an environmentally friendly way.

During the intervention phase, we investigated the effects that self-efficacy, social support and satisfaction with travel have on travel behavior change. These three factors were chosen since previous research (Eather, Morgan, & Lubans, 2013; Quaresma, Palmeira, Martins, Minderico, & Sardinha, 2015) has highlighted them as important for behavior change outside transportation research, but they have not been compared and considered together within travel behavior interventions.

First, self-efficacy (Bandura, 1982) is trust in one’s own ability related to a specific task. In the present study, this task is travel behavior change. Self-efficacy is a prominent factor in theories of behavior change (Deci & Ryan, 2000) and has been shown to be crucial for behavior change (Ryan, Patrick, Deci, & Williams, 2008). In addition, self-efficacy has been shown to be important for behavior change in several behavior change areas, such as weight control, tobacco use, and exercise behaviors (Strecher, McEvoy De Vellis, Becker, & Rosenstock, 1986). While self-efficacy has also been argued to be important for travel behavior change (Schreder, Siebenhandl, & Mayr, 2009), it does not seem to be sufficient to make travel behavior change happen (Crudden, Atononelli, & O’Mally, 2016).

Second, social support includes experiences of support and guidance of family, friends, colleagues, and employers. Social support has been highlighted as an important factor in travel behavior change (Skarin et al., 2017) as well as in other behavior change programs, such as family-based treatments for eating behavior and physical activity (Staats, Harland, & Wilke, 2004).

Third, satisfaction with travel is the level of satisfaction during travel with public transportation. Previous research on satisfaction during interventions has shown that satisfaction influences the target behavior. For instance, satisfaction during smoking behavior interventions has been researched with the result to be related to smoking behavior change; that is, smoking cessation (Baldwin et al., 2006). Satisfaction with travel has also been shown to be important for travel behavior change (Taniuguchi, Gräás, & Friman, 2014).

Taken together, several empirical studies have declared the importance of self-efficacy, social support, and satisfaction with travel for travel behavior change. However, since these factors have been studied together in contexts outside travel behavior interventions and singly within travel behavior interventions, there is a lack of studies covering all three together. More research has been called for in order to better understand the importance of these factors for behavior change (Steg & Vlek, 2009) and thus tailor successful travel behavior interventions. The present paper builds upon previous research and analyzes the importance of initial motives for participation, and the importance of self-efficacy, social support, and satisfaction with travel with regard to travel behavior change.

2. Travel behavior interventions

Travel behavior interventions are commonly used to make people reduce car use (Meyer, 1999). Usually, municipalities and/or public transportation companies organize interventions and use various techniques such as financial incentives and disincentives, infrastructure developments, and marketing and information campaigns (Gärling & Schuitema, 2007) to reduce car use in favor of pro-environmental and pro-health travel behaviors. Such methods either push or pull people to reduce car use. Penalties and fees are used to regulate (push) the old behavior of car use, while incentives and information campaigns are used to inspire (pull) people to the new, target behavior of public transportation use (Taylor & Ampt, 2003). Accordingly, these methods dominate travel behavior change research (Thøgersen, 2009, 2014).

Extensive research in car use reduction has revealed that interventions to change travel behavior have strengths and weaknesses (Bamberg, Fujii, Friman, & Gärling, 2011). Several reviews of travel behavior interventions argue that the interventions are effective (Brög, Erl, Ker, Ryle, & Wall, 2009; Richter, Friman, & Gärling, 2010). However, an overview of previous findings shows that explanations of the effectiveness of travel behavior interventions, especially explanations concerning the determinants of participation and the determinants of changed behavior (Richter et al., 2010), contain gaps. Adjei and Behrens (2012) have underscored the importance of distinguishing among how choices are made, what factors affect these choices, when behavior change occurs, and how participants respond to behavior change interventions. To better understand how participation in intervention programs can lead to behavior change, research could focus on the motives people have for engaging in these programs and on satisfaction during the intervention program, as well as background factors like self-efficacy and social support.

We have identified two important phases of the travel behavior intervention and named them (a) the pre-intervention phase and (b) the intervention phase. In the pre-intervention phase, right before entering the intervention program, participants have different motives for choosing to engage in it. Then, during the intervention phase, the target behavior is trialed for a couple of weeks, where the participants’ self-efficacy, social support and satisfaction with travel play different roles. The two phases are discussed thoroughly in the following sections.
Likewise, Eastin and LaRose (2000) showed that Internet self-efficacy is positively correlated with Internet use. When it comes to travel behavior change, self-efficacy has been shown to be an important factor in the adoption of new travel behavior technologies; for example, people who think they are less technically skilled avoid public transportation ticket machines (Schreder et al., 2009). Thus, lack of self-efficacy may be a barrier for public transportation use. A study on self-efficacy among travelers with visual disabilities (Crudden et al., 2016) showed that self-efficacy might not always be sufficient to enable those with visual disabilities to successfully implement transportation tasks.

### 2.1. Pre-intervention phase

Without motivation during the pre-intervention phase, people will not participate in intervention programs. Further, motivation can take various shapes and, in the area of travel behavior interventions, it has been shown that common motives to engage are financial, health, and environmental reasons (Skarin et al., 2017). The importance of motives as a driver for behavior has been shown both in a general sense (Ajzen, 1991) and, more specifically, in regard to travel behavior choices (e.g., Bamberg & Schmidt, 2001; Verplanken, Aarts, van Knippenberg, & van Knippenberg, 1994). The present study investigates whether motives to participate in a travel behavior intervention influence travel behavior change.

Motives for engaging or not engaging in behavior change intervention must be distinguished from motives that are important for behavior change generated by participation in intervention programs. With regard to participating in behavior change interventions, including overweight management, physical activity promotion and smoking cessation, Lakerveld et al. (2008) showed that the most frequent motives for participating in an intervention program were “the will to change something” and “interest in the study”. The most common motives for not participating in the intervention were financial reasons and lack of time. Concerning motives that are important for behavior change, previous research on health behavior change has highlighted intrinsic motivation, or autonomy, as important (Ryan et al., 2008). Previous research on the effect of motives to participate on travel behavior change is sparse. An interesting study for our purposes is which presents quite modest results on the effect of motives on travel behavior change, but argues that the combination of free public transportation ticket and commitment was most effective for long-term travel behavior change.

In sum, previous research has focused on motives for participating and not participating in behavior change intervention (Lakerveld et al., 2008), motives for not changing behavior (Skarin et al., 2017), and various specific motives such as norms (Eriksson, Garvill, & Nordlund, 2008) and commitment (Bachman & Katzev, 1982; Matthies et al., 2006). However, there is still a lack of knowledge about the importance of different motives for participating in behavior change interventions.

### 2.2. Intervention phase

When engaging in behavior change interventions, participants are encouraged to try the target behavior with the aim of adopting an altered behavior. In intervention settings other than travel behavior, studies have been conducted on self-efficacy in combination with social support and satisfaction during the intervention. For instance, in a physical activity intervention setting, a school-based intervention study conducted at three schools (with 1052 participants) over a period of two school years showed that experiencing increased social support and self-efficacy were associated with increased physical activity (Quaresma et al., 2015). Another example is in a smoking cessation intervention setting; during an eight-week intervention targeting adult smoking behavior (the goal of the program was cessation) with follow-ups after two, nine, and 15 months, self-efficacy and satisfaction during the intervention were shown to predict smoking behavior change (Baldwin et al., 2006).

#### 2.2.1. Self-efficacy

Bandura (1982) introduced self-efficacy as “a belief in one’s ability to effectively perform and to exercise influence over a specific event”. An example of a specific event could be travel behavior change, as in the present study. Self-efficacy determines how people feel, think, motivate and behave (Bandura, 1977). People who experience high self-efficacy set higher goals, put more effort into changing behavior, and seek knowledge from the behavior change process. A health behavior change review (Strecher et al., 1986) showed a strong relationship between health self-efficacy and health behavior change. Likewise, Eastin and LaRose (2000) showed that Internet self-efficacy is positively correlated with Internet use. When it comes to travel behavior change, self-efficacy has been shown to be an important factor in the adoption of new travel behavior technologies; for example, people who think they are less technically skilled avoid public transportation ticket machines (Schreder et al., 2009). Thus, lack of self-efficacy may be a barrier for public transportation use. A study on self-efficacy among travelers with visual disabilities (Crudden et al., 2016) showed that self-efficacy might not always be sufficient to enable those with visual disabilities to successfully implement transportation tasks.

#### 2.2.2. Social support

In several behavior change interventions, perceived support from family, friends, and employers has been shown to be important for behavior change in the areas of physical activity and eating behavior (Winston et al., 2015) as well as pro-environmental behavior (Staats et al., 2004). In a family-based study on changed physical activity, Holm, Wyatt, Murphy, Hill, and Odgen (2012) showed that mothers’ increase in physical activity positively influenced their children’s physical activity. Further, Winston et al. (2015) argued that, in an eating behavior intervention, participants’ social network influenced their eating behavior and thus their weight; support from children and coworkers was shown to be positively related to changes in eating behavior and weight loss. Staats et al. (2004) explained that changes in pro-environmental behavior can be caused by the degree of social influence experienced. Eather et al. (2013) showed that social support, self-efficacy and enjoyment were predicating factors for exercise behavior change. Family-based treatment (Epstein, Valoski, Wing, & McCurley, 1994) is an example of the inclusion of social support in intervention programs and is often used for changing
eating and physical activity behavior. A Swedish travel behavior intervention found that having significant others supporting a new travel behavior was positive for behavior change (Skarin et al., 2017).

2.2.3. Satisfaction with travel

Satisfaction is described as “an intrinsic positive consequence emerging from a behavior that fulfills the expectations of an individual” (Ryan & Deci, 2000). Affective (such as stress or enjoyment) and cognitive evaluations are part of the satisfaction process (Friman, Fujii, Ettema, Gärling, & Olsson, 2013). Satisfaction with travel includes one affective and one cognitive dimension. Satisfying experiences have been shown to increase intrinsic motivation, which increases the will to repeat the behavior. Consequently, experiencing satisfaction during interventions is assumed to increase the likelihood that the individual will sustain the behavior change. Focusing on children’s exercise behavior in school, Eather et al. (2013) conducted a six-month follow-up study after an eight-week intervention program and showed that the experience of enjoyment had positive effects on exercise behavior change. Taniguchi et al. (2014) found that the more satisfied the participants in a travel behavior intervention were with their public transportation travel, the more they intended to use public transportation in the future.

2.3. Travel behavior change

Setting a behavior goal has been showed to be highly important for reaching behavior goals and making behavior changes (Ajzen, 1991). In travel behavior change through voluntary travel behavior interventions, travel change goals has been shown to promote changed travel behavior, such as reduced car use (e.g. Fujii & Taniguchi, 2005). Taniguchi et al. (2014) conducted a one-month free public transportation trial in which participants accepted a minimum travel change goal (to use public transport at least three times per week commuting to or from work) to participate in the intervention, but were free to set higher travel change goals. Taniguchi et al. (2014) showed that participants who reported that they experienced goal achievement – that is, reached their travel goal during the intervention period – were more likely to make travel behavior changes (that is, travel more with public transportation) and more likely to continue the target travel behavior in the future.

3. Summary of the present study

The aim of the present field study is to investigate whether previous research findings from related areas of health behavior change interventions associated with behavior change (Eather et al., 2013; Quaresma et al., 2015) also apply to travel behavior interventions; in other words, the importance of motives to enroll in a travel behavior change intervention for travel behavior change. Another aim is to investigate the effect of self-efficacy, social support, and satisfaction with travel during the travel behavior change intervention on travel behavior change. The research questions for the study are as follows:

- RQ1: Does motives in the pre-intervention phase influence travel behavior change?
- RQ2: Do self-efficacy, social support, and satisfaction with travel during the intervention phase influence travel behavior change?

In order to investigate these two research questions, we conducted a hierarchical regression analysis with two blocks of predictor variables and travel behavior change as the dependent variable. In the first block we entered the motives to enroll in the travel behavior change intervention collected during the pre-intervention phase in order to test RQ1. In the second block we entered all data collected during the intervention phase in order to investigate RQ2.

4. Method

4.1. Participants

Värmlandstrafik, the regional public transportation provider in Värmland County, recruited participants to a voluntary behavior change intervention via a large-scale marketing and information campaign (including poster advertising and ads in local newspapers). The selection criteria were based on car ownership; that is, car-owners were supposed to be able to reduce their car use by using public transportation, and were therefore selected to participate. Participants were offered a free travel pass that was valid for two weeks throughout the region (valued at approximately €100). Värmlandstrafik provided email addresses to which we, as independent researchers, sent a link to web-questionnaires. Two thousand participants in the travel intervention program were invited to participate in the study, 468 of whom responded in the first wave, 264 in the second wave, and 202 in the third wave. As a result of the within-subjects analysis, another 21 subjects were dropped due to incomplete data, resulting in 181 complete questionnaires. The final sample consisted of 66 percent female and 34 percent male participants who were aged between 19 and 66 (M = 45.7, SD = 12.06) with a median income level of 25–29,000 Swedish Krona (SEK) per month. Fifty-seven percent of respondents had studied at university and all held driving licenses.
4.2. Procedure

The data was collected through web-based surveys that were sent out in three waves, one before the intervention, one during, and one two weeks after the intervention. Each web-survey was open for two weeks. A reminder was sent after one week. The pre-intervention questionnaire, which was sent out before the intervention, contained questions regarding motives for enrolling in the intervention, travel behavior goals, and demographics. The questionnaire sent out during the intervention contained questions regarding the participants current subjective experience of self-efficacy, social support, and satisfaction with travel. Finally, the questionnaire sent out after the intervention contained questions relating to travel behavior change and future travel intentions.

4.3. Material

Motives were measured by a question asking participants to tick one or several boxes identifying their reason(s) for participating in the travel behavior intervention. They could select from the following motives: **Good for the environment** (63 percent ticked this box); **It’s free of charge** (62.4 percent); **Good for health walking to and from public transport** (16.6 percent); **Car is expensive/hard to find parking, etc.** (43.6 percent); **Curious, fun to try** (38.1 percent); **Desire to change travel behavior, this offer gave me an opportunity to start** (47.5 percent); **Freedom to do other things while traveling, such as read, sleep, work** (32 percent); **Don’t know** (0 percent); **None of the above** (2.2 percent). The motives to choose from are in line with motives used in previous research on travel behavior interventions (see, for instance, Taniguchi et al., 2014).

All selected motives were dummy coded as a 1 if the corresponding check box was ticked and a 0 if not. **Travel goals** were measured during the first wave of questions on a six-point scale with the options “1–2 more trips a week” (25.8 percent), “3–4 more trips a week” (28.8 percent), “5–6 more trips a week” (18.4 percent), “7–8 more trips a week” (9.2 percent), “9–10 more trips a week” (12.3 percent), and “more than 10 more trips a week” (5.5 percent).

**Self-efficacy** was measured by a 100-point Visual Analogue Scale (VAS; Aitken, 1969) on how strongly the participants believed they would reach their travel behavior change goal (M = 66.90, SD = 23.11). The validity of a single-item scale has been shown to be satisfactory in general (Bergkvist & Rossiter, 2007, 2009) and in relation to self-efficacy (e.g., Hoepner, Kelly, Urbanoski, & Slaymaker, 2011).

**Social support** – that is, the support participants experienced during the intervention program from family and employers in changing their travel behavior – was measured by a 100-point VAS ranging from **not at all** to a **lot of** (M = 67.37, SD = 26.85). Using a single-item scale for social support is in line with previous research (e.g., Atroszko, Pianka, Racynska, Sektas, & Atroszko, 2015).

**Satisfaction with travel** was measured by the Satisfaction with Travel Scale (STS; Friman et al., 2013), where the participants were asked how satisfied they were using public transportation. To reduce response burden, we used a shortened STS with three semantic differential scales defined by a pair of end-point statements and measured on a seven-point scale: STS-stressed with the endpoints **Stressed** and **Calm** (M = 3.91, SD = 1.59), STS-bored with the endpoints **Bored** and **Enthusiastic** (M = 3.77, SD = 1.25), and STS-quality with the endpoints **Worst Quality** and **Highest Quality** (M = 4.25, SD = 1.25). Previous research (Västfjäll & Gärling, 2007) has shown that the difference between a full-length scale and a compressed scale was not significant when questions within a dimension have high correlations.

**Travel behavior change** was measured through self-reporting after the intervention ended. The participants were asked about their travel behavior change compared to their goal before the intervention, using a scale with the following four points: “Did not reach my goal at all” (10.5 percent), “reached my goal partially” (44.2 percent), “reached my goal fully” (39.8 percent), and “exceeded my goal” (5.5 percent). Since the travel goals hold individual ambitions of changing travel behavior from car to public transport, travel goal achievement necessitates travel behavior change. Furthermore, by looking at travel behavior change in terms of achievement of individual travel goals, the impact of confounding variables such as individual differences in frequency of travel is avoided. Self-reported measurements on travel behavior change are in alignment with previous research (see, for instance, Abou-Zeid & Ben-Akiva, 2012; Taniguchi et al., 2014).

**Future travel intentions** were measured through self-reporting after the intervention ended on a seven-point scale, with the following options: **no extra trips a week** (16.0 percent), **1–2 more trips a week** (43.6 percent), **3–4 more trips a week** (16.0 percent), **5–6 more trips a week** (17.7 percent), **7–8 more trips a week** (8.8 percent), **9–10 more trips a week** (6.6 percent), or **more than 10 more trips a week** (1.7 percent). This measure is based on previous research on future travel intentions (Taniguchi et al., 2014).

5. Results

In order to investigate RQ1 (Do motives in the pre-intervention phase influence travel behavior change?) we entered the motives (desire to change travel behavior, concern about the environment, desire for a free ticket, concern about health, concern about the expense of using a car, curiosity for trying public transportation, desire to have freedom to do other things) collected during wave 1 – the pre-intervention phase – as block 1 in a hierarchical regression model and regressed them on the travel behavior change. Overall, the two primary motives of participants to enroll in the intervention program were the desire to receive a free ticket (63 percent) and the desire to address environmental concerns (62 percent). Their least-
reported reason was a desire to improve health (17 percent) (for the proportion of all motives see the description of the motives in the methods section). The results of block one \( F(7,139) = 1.691, p = .117, \) \( R^2_{\text{adjusted}} = 0.034 \) showed no significant values. The motive with the highest weight was desire to change travel behavior \( (b = 0.178, p = .06) \), followed by freedom to do other things \( (b = 0.156, p = .07) \).

In order to investigate RQ2 (Does self-efficacy, social support and satisfaction with travel during the intervention phase influence travel behavior change?) we entered all data (self-efficacy, social support, and the three STS scales) collected during wave 2 – the intervention phase – as block 2 in the hierarchical regression model and regressed both blocks on travel behavior change. The results showed that Model 2 was significant \( F(12,136) = 4.437, p < .001, \) \( R^2_{\text{adjusted}} = 0.233 \). Inspection of beta coefficients showed that none of the motives or the STS scales were significant. However, both the beta weights for social support and self-efficacy were significant \( (p < .05) \). For beta weights and \( p \)-values for all variables, see Table 1.

Lastly, we conducted a correlation analysis in order to verify the relevance of the above-presented model of travel behavior change. The results of the correlation analysis showed that there was a significant positive correlation \( r = 0.237, p = .001 \) between travel behavior change and future travel intentions.

### 6. Discussion

On an overall level, the results of the present field-study show that experiences of self-efficacy and social support have a greater impact on travel behavior change than reasons for enrolling in the intervention. More specifically, the results of the study regarding RQ1 show no clear support for the idea that different motives would have different impacts on travel behavior change. However, it is noteworthy that the motives that had the highest (albeit non-significant) impact on travel behavior change were those of wanting to change, and freedom; as opposed to the most common motives for participating (wanting to help the environment or wanting to improve health). This implies that the most common motives for participating in the intervention may be different from those that are most important for travel behavior change. This can inspire future research on motives. To motivate individuals to change their travel behavior into more sustainable modes of transport, more research is required on how to recruit participants to travel behavior interventions.

The results of the study regarding RQ2 show that (a) self-efficacy and social support during the intervention phase play a significant role for travel behavior change and (b) satisfaction with travel during the intervention seems to be of little importance. The findings showing that social support during participation in a travel behavior change intervention promote travel behavior change are in line with previous research (e.g., Skarin et al., 2017). The results of the present study are also in line with previous research showing that self-efficacy is important for travel behavior change (Schreder et al., 2009) and that self-efficacy alone seems to be insufficient to make successful travel behavior changes (Crudden et al., 2016). However, the results of the present study regarding satisfaction with travel differ from previous research (e.g., Taniguchi et al., 2014), which may be explained by the generally high reported satisfaction with travel \( (M = 3.77–4.25) \). Participants reported that they were highly satisfied with their experience of traveling with public transportation, which possibly resulted in roof effects. Lastly, the results of the present study show a positive relationship between travel behavior change during the intervention and future intentions to use public transport corroborating previous research on future intention and travel behavior change (Fujii & Taniguchi, 2005; Taniguchi et al., 2014). Hence, in addition to showing that self-efficacy and social support during an intervention increases an individual's likelihood of achieving travel behavior change, the results of the current study also show that successfully changing one's travel behavior in accordance to one's plans increases intentions to continue with the target behavior.

### Table 1

Results of the hierarchic regression analysis of motives and self-efficacy, social support and satisfaction with travel explaining travel behavior change.

<table>
<thead>
<tr>
<th></th>
<th>Beta</th>
<th>( p )</th>
<th>Beta</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desire to change</td>
<td>0.18</td>
<td>.06</td>
<td>0.15</td>
<td>.07</td>
</tr>
<tr>
<td>Environment</td>
<td>0.01</td>
<td>.90</td>
<td>0.08</td>
<td>.37</td>
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<tr>
<td>Free ticket</td>
<td>−0.03</td>
<td>.73</td>
<td>−0.03</td>
<td>.70</td>
</tr>
<tr>
<td>Health</td>
<td>0.06</td>
<td>.53</td>
<td>−0.21</td>
<td>.78</td>
</tr>
<tr>
<td>Car expense</td>
<td>0.15</td>
<td>.09</td>
<td>0.12</td>
<td>.19</td>
</tr>
<tr>
<td>Curiosity</td>
<td>0.03</td>
<td>.72</td>
<td>0.05</td>
<td>.58</td>
</tr>
<tr>
<td>Freedom</td>
<td>0.16</td>
<td>.07</td>
<td>0.05</td>
<td>.7</td>
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<tr>
<td>Increment ( \Delta R^2 = .084 )</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>STS-stress</td>
<td>0.5</td>
<td>.69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STS-bored</td>
<td>0.11</td>
<td>.27</td>
<td></td>
<td></td>
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<tr>
<td>STS-quality</td>
<td>0.02</td>
<td>.85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>0.19</td>
<td>.02</td>
<td></td>
<td></td>
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<tr>
<td>Social support</td>
<td>0.37</td>
<td>&gt;.001</td>
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<tr>
<td>Increment ( \Delta R^2 = .216 )</td>
<td></td>
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<tr>
<td>Full model</td>
<td>( R^2 = .233 )</td>
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</table>
Based on the findings of the present study, travel behavior interventions should consider possible ways to increase participants’ sense of self-efficacy and social support. Increasing self-efficacy is a way to help people change their travel behavior. Intervention programs for travel behavior change benefit from taking self-efficacy into account, both in terms of targeting participants with high self-efficacy and in enhancing self-efficacy in others. The finding that social support is important for travel behavior change can be used to highlight support from others, both for individuals and intervention designers. For example, travel behavior campaigns that provide benefits to those who sign up with a friend, colleague or family member could be offered.

In sum, the results of the present field study show that the most important predictor of travel behavior change through intervention is self-efficacy, followed by social support, and that motives for participation need further investigation in relation to travel behavior change.

6.1. Limitations and future research

Various methods and techniques can be used to measure travel behavior change. In the present study, researchers used subjective self-reports in order to avoid data errors caused by shared travel cards. The subjective measurement was on travel goal achievement, which has previously been shown to promote travel behavior change in terms of increased public transport use and continued future intention and travel behavior (Fujii & Taniguchi, 2005; Taniguchi et al., 2014). However, an objective measurement tool, such as trips registered, could have been used to measure travel behavior change instead of self-reports. In future research, more objective measures such as personal travel cards or telephone apps could be used.

The measurements of self-efficacy and social support were measured only once during the intervention, so it is not possible to know whether the reported levels of the self-efficacy and social support are an effect of travel behavior during the intervention or if the self-efficacy and social support are a cause of travel behavior. However, based on the data it is clear that self-efficacy and social support measured during the intervention is a good predictor for travel behavior change.

The present study found that the most important motive for travel behavior change through participation in the intervention was the desire to change behavior. Future research could build on this finding by thoroughly investigating motivation to change travel behavior – how the desire emerges, how it is identified, and how it is enhanced.

6.2. Conclusion

It seems like the most common motives to participate in travel behavior interventions are not the same as those that are most important for travel behavior change. Future research should investigate this further. The results from the present field study show that self-efficacy and social support are significantly related to travel behavior change. This knowledge can be used to design more efficient travel behavior intervention. One way to do this is to target people who already have high self-efficacy and high social support; another way is to help people increase their self-efficacy and social support to enhance their chances for travel behavior change. When combined, these strategies might help to reduce car use and increase public transportation use by making more effective voluntary travel behavior interventions.

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References


