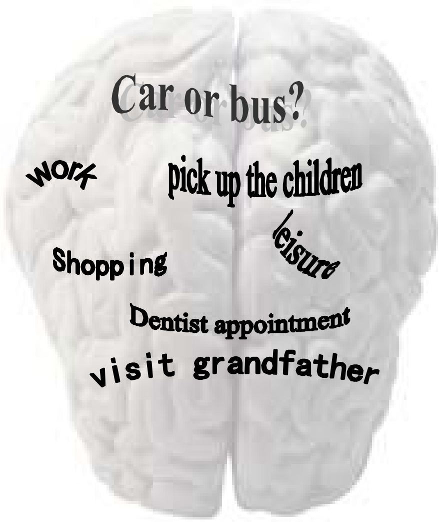

Household planning of car use: implementation of prospective car logs

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Household planning of car use: implementation of prospective car logs

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Abstract

In an attempt to identify habitual, planned and impulsive car use and to describe its characteristics, six trip categories; *work, shopping, leisure, personal service, social visits* and *chauffeuring* were investigated in a field study of forty households. The households made a prospective and an actual car log each for one week. When comparing the car logs an expected underprediction of trip frequencies was found. The underprediction was largest for *shopping* and *chauffeuring* trips and smallest for *work* trips. Having more than one car, children, high incomes and both adults working were hypothesised to be related to more unplanned trips in certain categories. This was partly supported, since higher frequency *shopping* trips than planned were significantly related to ownership of more than one car, *leisure* trips to a higher income, and *chauffeuring* trips to the number of children. Subjective reports indicated that underprediction is caused by *weather conditions, illness, switching mode* and *unplanned activities.*

Keywords

Car use, travel plans, intention, trip purpose, household characteristics, field study , International Conference on Travel Behaviour Research, IATBR

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1. Introduction

In most metropolitan areas in the world the increasing number of cars creates problems with congestion, air pollution and noise (Goodwin, 1996; Greene and Wegner, 1997; Sperling, 1995). In order to influence peoples' car use with the purpose of reducing these problems, a number of measures and policies have been proposed. The terms travel demand management (TDM) (Gärling *et al.*, 2002; Meyer, 1999), mobility management (Rye, 2002) transportation control measures (TCM) (Pendyala *et al.*, 1997), and travel blending (Rose and Ampt, 2001) have been used when referring to such measures. These measures, particularly the more coercive ones, are known to be difficult to implement due to lack of public and political acceptability (Emmerink *et al.*, 1995; Jones, 1995; Schlag and Teubel, 1997). Even if acceptance is achieved, it may however not lead to permanent changes in private car use. The argument in this paper is that the impact of TDM measures such as, for example, pricing schemes or improvement of public transportation will be less successful unless car use is under motivational and volitional control.

1.1 Habitual, impulsive or planned?

Car use is either habitual, impulsive, or planned. These three qualities appear in much of the research on car use. When a behaviour becomes habitual, no intention is formed, resulting in less conscious thinking and more automatic processing of information (Ouelette and Wood, 1998; Verplanken *et al.*, 1994). Habitual car use resulting from the repetitive character and high frequency of car use can to some degree explain why it is hard to change (Aarts *et al.*, 1997, 1998; Gärling *et al.*, 2001; Verplanken *et al.*, 1994).

Impulsiveness can also add to the explanation as to why car users have difficulty in changing their behaviour and attaining car-use reduction goals. Impulsive behaviour is less influenced by intentions since these are less elaborated or specific (Gollwitzer, 1993) and formed close in time to the execution of the behaviour (Gärling *et al.*, 1998). Impulsiveness may also be associated with the sense of freedom car users experience. This affective side of car use (Steg *et al.*, 2001), together with the tendency to be guided by instant rewards rather than future ones, may contribute to car users acting in an impulsive manner rather than planning their trips. For instance, the instant rewards of status, speed, comfort and flexibility of driving tend to be preferred over the longer-term environmental, physical and health benefits of walking or cycling (Garvill, 1999).

In order to resist impulses, break habits, and to reach a car-use reduction goal, planning may be an important factor since it is likely to facilitate the implementation of an intention by increasing strength and enhancing memory of the intention, and by co-ordinating concurrent, possibly conflicting plans and goals (Gärling *et al.*, 1998). It has in fact already proven to be a powerful mental strategy which helps individuals to reach their goals (Gillholm *et al.*, 1999; Gollwitzer, 1993, 1996). Planning may also be referred to as "mental practice" resulting in an implementation intention tying the behaviour to specific situations (Gollwitzer, 1993, 1996). When the situation appears, individuals have a "mental support" to help control their actions. Planning may therefore be viewed as reducing uncertainty about the implementation of intentions. The extent of planning of car use is believed to range from high awareness when a trip with low frequency (e.g. a weekend vacation trip) is planned to virtually no planning due to low awareness, automatic processes and habitual behaviour for high frequency trips (e.g., daily work trips) (Verplanken *et al.*, 1994, 1997).

1.2 Trip purpose categorisation

The broadest categorisation of trip purposes in travel research is *work* trips vs. *non-work* trips (Bhat, 1998). Others have used the broad categories *work, shopping,* and *leisure* (Gärling *et al.*, 1998), or *work-related activities*, *reproductive activities* (including shopping, service and care) and *free time activities* (Vilhelmson, 1999). A forth category is *chauffeuring* referring to trips with the main purpose of picking up or dropping off someone (Gärling *et al.*, 2000). I suggest adding two categories labelled *personal service* and *social visits*. These trip purposes are assumed to fit within the leisure category which may be too broad. *Personal service* refers to trips with the purpose of taking care of oneself, one's health or appearance, for example, trips to the hospital, the dentist, the therapist, the hairdresser, or the beautician. These types of trips may differ from other leisure trips in being less impulsive, because they are restricted in time and place by an appointment. *Social visits* may also require more planning as they involve other people.

I assume that work trips are the most habitual since they recur with high frequency, and intentions may not need to be formed each time they are carried out. Shopping, chauffeuring, and leisure trips may be more impulsive as they generally are more flexible in time. Personal service and social visits trips are believed to require that car users form goal intentions, and therefore become engaged in more planning. These hypotheses are summarised in Table 1.

Table 1 Proposed classification of trips as habitual, impulsive or planned

Trip purpose	Intention formation	Degree of planning
Work	none	habitual
Shopping	late	impulsive
Personal service	early	planned
Social visits	early	planned
Leisure	late	impulsive
Chauffeuring	late	impulsive

1.3 Discrepancies between stated and actual car use

In order to reduce car use, people have to change their goals and priorities (Gärling *et al.*, 2002). However, even when this is achieved and thus an intention to reduce car use is formed, there are still many obstacles to overcome. A related discrepancy between attitudes and behaviour is well documented and explored in attitude research (Eagly *and* Chaiken, 1993). Although intentions are better predictors of behaviour than any other measure (Ajzen,1991, 2001), there are still inconsistencies that need to be explained.

Inducing planning has in previous research proved to be a tool for households to reduce their car use (Gärling *et al.*, 1998; Gärling *et al.*, 2000; Jakobsson *et al.*, 2002). In this research, by letting respondents fill out a prospective car log, the awareness of excessive car use is increased so that a reduction goal is more easily attained. Although planning help car users to make a reduction, there are sometimes large discrepancies between planned and actual car use. In line with Fujii and Gärling (2003), I will adopt the expressions *error of omission* and *error of commission* when describing what may underlie these discrepancies. Possible reasons for these errors discussed below are summarised in Figure 1. When looking at the number of trips which are planned compared to how many are actually made, there is a tendency to underpredict the number, indicating an *error of omission*. Participants thus perform a behaviour although they have no intention to do that when asked about their plans. In discussing this phenomenon Gärling *et al.* (1998) inferred that there may be many impulsive trips. Furthermore, when an induced plan is made, one suspects that mainly habitual trips or already scheduled trips are recorded. However, since habitual behaviours lack the intention-formation phase, some such trips may not be remembered. Trips may also be omitted if there is uncertainty about whether they will take place or not.

Figure 1 Possible explanations of discrepancies between planned and actual car trips

		Trip made: Yes	Trip made: No
Trip planned	Yes	Correct	**Error of commission:** Unrealistic plan Forgetting plan Weak intention Interfering unexpected event
	No	**Error of omission:** Habitual trip Impulsive trip Uncertainty Forgetting activities Interfering unexpected event	Correct

Overprediction can also occur. The failure to act on a stated intention is typical for *errors of commission*. Gärling *et al.* (1998) suggested that people are unrealistic and do not take into account concurrent plans, that they tend to change their minds due to weak or labile intentions, or that they forget intentions. This may be due to optimism regarding the number of activities one has time for during the week resulting in unrealistic plans. One may also forget about activities, or stay home because of unexpected events, for example, illness of household members or the car breaking down.

1.4 Aim and predictions

The present study focuses on households' planning of their car use and the execution of the plans they form. The households are induced to engage in a car-use reduction process by introducing economic incentives similar to a measure aiming at reducing car use. Under these circumstances they may become aware of habits and encouraged to reach a car-use reduction goal. The aim is to determine which types of trips are more readily controlled by planning. It is assumed that habitual trips as well as trips which normally are planned in advance are more easily influenced. It is also assumed that because habitual and planned trips are under volitional control, the greater proportion of underpredicted trips is mainly due to an addition of impulsive trips.

Three measures of car use will be investigated: number of trips, trip length and trip duration. This emphasises different dimensions of car travel, that is how often one travels, how far one travels and how much time is spent on travelling.

In order to gain additional knowledge about factors causing *errors of omission* and *errors of commission*, I will try to disentangle any determinants that make households more or less successful in keeping to a plan. Do sociodemographic factors predict the degree of planned trips? It has been shown (Lu *and* Pas, 1999) that sociodemographics have significant and complex relationships to participation in activities with an impact on travel behaviour. However, nothing is known about the role of sociodemographics for the discrepancies between planned and actual trips.

One may expect greater difficulty in keeping to a plan if a household has children who need chauffeuring to numerous activities. In multi-car households, a higher trip frequency in general is assumed since more cars provide more opportunity for impulsive trips. The number of working individuals in the household and income are expected to be related to underprediction of trips since such households may have a lower motivation to keep to a plan for economic reasons and also have the means to make a greater number of impulsive trips.

In summary, actual trips are assumed to correspond more accurately to planned trips if households have one car, no children, low incomes and both adults work. In general shopping and leisure trips are assumed to be underpredicted compared to actual trips. In order to test these hypotheses, data from prospective and actual car logs for two-adult households are compared for the trip purposes *work, shopping, leisure, social visits, personal service,* and *chauffeuring*. Moreover, the discrepancies between planned and actual car use will be related to the number of cars, households with or without children, number of workers, and income of the households.

2. Method

2.1 Sample

Households were recruited from a randomly selected sample of car owners living in a metropolitan area of Sweden (Greater Göteborg with approximately 550,000 residents). The recruitment was made in two steps. In the first step, the households responded to a mail-back questionnaire consisting of questions about different traffic-related topics such as travel habits, attitudes towards road pricing, and attitudes towards electrical vehicles (Jakobsson *et al.*, 2000). In the second step, two-adult households who had indicated in the questionnaire that they were willing to participate in a field study were contacted. Eighty households participated in the field study which also provided data on the effects of economic disincentives on car use reduction (Jakobsson *et al.*, 2002). Forty of the households were asked to make a prospective car log that provided the data to be analysed. Twenty five (62.5%) households had one car and 15 (37.5%) households had two cars. In 40% of the households at least one child lived at home. The mean age of the women was 45.7 years, whereas the men had a mean age of 48.6 years. Mean monthly household income was SEK 36 053 (SD = SEK 11 038). Household members were classified into workers (full-time and part time employed) and non-workers. The mean number of workers in the households was 1.3.

2.2 Procedure

The first contact with the households was made by telephone. Those who answered the calls were informed that the general purpose of the study was to investigate their attitudes toward car use and actual car use. They were also informed that both adults would be interviewed at home and required to record use of their car(s) during a number of weeks. If the households agreed to participate, some background questions were asked. Time was scheduled for the home visit.

During the home visit both adult members were present. They were informed that the specific purpose of the study was to investigate whether increased driving costs will lead to changes in car use[1]. They were then offered two movie checks in compensation for participation. Thereafter, the respondents were asked a few questions concerning their motivation to decrease car use during the period. They were then requested to fill out the prospective car logs. Both adult household members were asked to jointly report all trips they expected to make during the following seven days. A trip was defined to last from the start to each stop where an activity was

[1] Both adult household members signed an agreement promising them a sum of money. The requirement was that they should pay back SEK 10 (approximately EUR 1.08) for every 10 km they drove their car(s). This corresponded roughly to a 100% increase in the cost of driving. The promised sum (ranging from SEK 200 to SEK 3,000) was equal to the households' estimated weekly driving distance in km. The households were explicitly informed that they would lose the entire sum if driving distance equalled or exceeded the charge corresponding to it, but that they could keep any remaining amount.

performed. It was emphasised that travelling from work to home may consist of several trips. For instance, to pick up the child at school (chauffeuring), buy groceries at the shopping centre (shopping), and driving home (return home) would be recorded as three trips. The household members were told to think about the trips they usually make as well as trying to remember if there were any special events or activities in the coming week that would require extra trips. For each trip the household indicated origin, estimated time at origin, purpose (work, business-related, shopping, service, social visit, leisure, visit to weekend cabin, return home, or other), driver (husband, wife, or other), passenger(s) (husband, wife, child(ren), and/or other(s)), destination, estimated arrival time, and estimated distance between origin and destination.

The following seven days households kept a log of the car trips they actually made. This car log corresponded to the prospective car log reporting trip purposes, addresses, driver, and passengers. Odometer readings and time of departure and arrival were also recorded in the car log in order to provide data on distance and duration of trips.

After one week the respondents were reminded by phone to open a sealed envelope left during the home visit. It contained two questionnaires which they were told to individually fill out and mail back. In the questionnaire they were asked to rate whether they had managed to follow their plan or not. This was made on a five-point scale ranging from "kept the plan to a very small extent," to "kept the plan to a very high extent". They were also asked to list reasons for not following the plan if they had failed to do so.

3. Results

The different trip purposes are listed in Table 2. Four additional categories other than those given in Table 1, *return home*, *work-related, weekend-house*, and *other* were included in the car logs in order to cover all trips. In the subsequent analyses, *return home* trips were removed since these trips depend on other trips. *Work-related* trips were also removed because they may be particularly difficult for the household to control. The category consisting of trips to a *weekend house* was also removed. These trips are both few in numbers and typically had long travel distances. Only a minority of the households made these trips.

The category labelled *other* was checked by the households when the trip purpose did not fit any given category. In addition they were required to specify the purpose whenever this category was used. This made it possible to judge whether the trip could be recoded to any of the given categories. This was done by two judges. Any discrepancies between them were resolved by discussion. In this way, 75 (56.4 %) of the trips in the *other* category were recoded into the given categories. The recoding resulted in some of the given categories being expanded. Trips to a university course or an evening class were classified as *work trips*. Trips to the gas station, the post-office or bank were classified as *shopping*. A wide range of activities for instance, exercise, going to the theatre, going to a restaurant, going to a church, or a non-work meeting were recoded to the *leisure* category. The *chauffeuring*, *personal service* and *social visit* categories remained quite narrow and few trips were recoded into these categories.

Table 2 Frequencies for planned, actual and recoded trips

Trip purpose	Planned	Executed	Recoded trips (planned/executed)
Work	142	187	4/6
Shopping	56	169	6/16
Personal service	17	48	1/5
Social visits	24	46	1/1
Leisure	44	60	7/28
Chauffeuring	85	151	-
Weekend house	8	8	-
Work-related	47	59	2/1
Other	11	47	-
Return home	273	368	-

The total number of planned trips is 368 and the number of executed trips is 661, which is a general underprediction of trip frequency. Households plan on average about 9 trips per week and execute about 16 trips per week. It results in an average of one trip per day which was not anticipated in the plan. When looking at the different categories one may conclude that *work*, *shopping* and *chauffeuring* are the most frequent, covering 77% of all trips. The smallest difference between the number of planned and executed trips is found for trips to *work* (a 32% increase). The number of executed *shopping* trips exceeded the plan with more than 200%, which makes this category the most underpredicted. For *personal service* one also notes a substantial increase in actual trips compared to planned (182%). *Social visits* are likewise underpredicted (92%). *Leisure* trips only increased by 36%. Finally, *chauffeuring* trips were underpredicted by 77%.

Separate hierarchical regression analyses are reported in Table 3 for the six trip purposes. Number of actual trips was the dependent variable and the independent variables were the

Table 3 Means, standard deviations, simple correlations (r), unstandardised regression coefficient (b), and t-statistics from hierarchical regression analysis for the different trip purposes, with the number of trips as dependent variable and planned number of trips and household characteristics as independent variables

	Work						**Shopping**						**Personal service**					
Variables	M	SD	r	b	t	p	M	SD	r	b	t	p	M	SD	r	b	t	p
Number of trips	4.5	4.1					4.2	4.0					1.2	1.7				
Step 1																		
Constant				1.08	2.64	.012				2.31	3.55	.001				0.65	2.44	.020
Planned number of trips	3.3	3.6	.89***	1.02	.21	.001	1.4	1.8	.61***	1.36	4.73	.001	0.4	0.7	.54***	1.29	3.99	.001
Step 2																		
Number of children	0.7	1.0	.25	-0.15	-0.49	.630			.23	0.67	1.33	.193			.09	0.15	0.62	.540
Number of workers	1.3	0.8	.43**	0.46	0.99	.328			-.06	-0.33	-0.51	.615			-.15	0.01	0.05	.963
Household income	2.6	1.1	.22	0.21	0.70	.490			.07	-0.28	-0.58	.565			-.11	-0.10	-0.43	.670
Number of cars	1.4	0.5	.60***	0.92	1.07	.293			.39**	2.34	2.19	.036			.31*	0.63	1.16	.255
	Adj R^2 = .79, F (5, 39) = 29.66, p<.001								**Adj R^2 = .41**, F (5, 39) = 6.36, p<.001						**Adj R^2 = .24**, F (5, 39) = 3.42, p<.05			

Table 3 continued

	Social visits						Leisure						Chauffeuring					
Variables	M	SD	r	b	t	p	M	SD	r	b	t	p	M	SD	r	b	t	p
Number of trips	1.1	1.2					1.5	1.7					3.7	5.6.				
Step 1																		
Constant				0.67	3.64	.001				0.94	3.06	.004				1.35	2.17	.036
Planned number of trips	0.6	0.9	.56***	0.71	4.16	.001	1.1	1.4	.43**	0.53	2.91	.006	2.1	4.0	.79***	1.08	7.89	.001
Step 2																		
Number of children			-.13	-0.19	-1.18	.248			.10	-0.01	-0.16	.872			.65***	2.10	4.24	.001
Number of workers			-.29*	-0.18	-0.88	.384			.13	0.01	0.66	.860			.03	-0.80	-1.37	.178
Household income			-.15	-0.06	-0.40	.689			.37**	0.44	1.97	.049			.20	0.23	0.54	.593
Number of cars			.02	0.24	0.73	.469			.27*	0.20	0.69	.177			.15	1.61	1.67	.104
			Adj R^2 = .29, F (5, 39) = 4.18, p<.01						**Adj R^2 = .24**, F (5, 39) = 3.51, p<.05						**Adj R^2 = .75**, F (5, 39) = 24.94, p<.001			

planned number of trips in step 1 and household characteristics in step 2. The constants given in Table 3 for step 1 reflect the differences between the planned and the actual trip frequencies. As may be seen, for all trip purposes the actual trip frequencies are higher than the planned frequencies. Statistically, all the constants differ reliably from zero.

Pairwise dependent *t*-tests at *p*=.05 showed that the difference is reliably higher for *shopping* trips compared to *social visits* and *personal service* trips. Furthermore, the higher than planned frequency for *shopping* trips is significantly related to households having more than one car, for *leisure* trips it is significantly related to a higher income, and for *chauffeuring* trips it is significantly related to the number of children.

Mean length in kilometres and mean duration in minutes per trip were generally longer for planned than actual trips (see Table 4). *t*-tests at *p*=.05 comparing these means for the six categories yielded significantly longer mean distance and duration per trip for *work*, *personal service* and *social visit*s.

Table 4 Mean distance in kilometers and mean duration in minutes per trip for different pur poses

	Mean distance per trip (km)					Mean duration per trip (min)				
Trip category	Actual	Planned	t	p	r	Actual	Planned	t	p	r
Work	10.2	13.3	2.13	.044*	-.06	15.5	18.3	2.55	.019	-.29
Shopping	6.7	8.1	1.44	.163	.05	12.6	13.1	0.25	.802	.01
Personal Service	5.9	8.0	2.70	.022*	.05	11.6	18.5	2.79	.019	-.21
Social visits	12.4	20.3	2.49	.027*	-.30	15.3	23.4	2.52	.025	-.13
Leisure	11.3	14.5	-0.26	.801	-.06	18.9	20.7	0.41	.687	-.31
Chauffeuring	22.3	14.7	-0.89	.389	-.39	24.4	23.4	-0.11	.913	-.41

To test whether unplanned trips are shorter or longer than planned trips, the differences between actual and planned distance per trip and between actual and planned duration per trip were, for each trip purpose, correlated with the difference between the actual and planned frequencies of the trips. If a household underpredicts trips, the latter variable would be positive and the difference for the former would be negative when the household reports shorter trips in the actual car log. The correlation between these variables are then expected to be negative if unplanned trips are shorter than planned trips. In general the correlations are low, either being near zero or negative. The highest negative correlation is found for the chauffeuring trips, indicating that particularly in this case, and also in the case of social visits, unplanned trips are shorter than planned trips.

In the questionnaires administered after the car logs the mean ratings of the degree of correct planning were 3.3 for the women and 3.5 for the men (on a five-point scale ranging from "keeping the plan to a very small extent" to "keeping the plan to a very high extent"). In total 61 reasons for not keeping the plan were provided by 17 women and 18 men. Eighteen reasons referred to omitted trips and 43 to an increase in the number of trips. The reasons may be divided into four main categories*: weather conditions, illness, unplanned activities,* and *switching mode*. The most common reason for not making trips was when the respondent or someone in the family became sick, although *illness* was also a reason for unplanned trips to the medical centre or the hospital. Extreme weather conditions (i.e. a snow storm) was a reason for staying at home, whereas less extreme changes in weather conditions such as rain or cold was a reason to switch to car from walking, bicycle, or public transport.

Finally, *unplanned activities* was otherwise the most frequent reason for underprediction of trips. Some examples of unplanned activities were helping relatives, chauffeuring the children, and shopping. However, most respondents indicated that unspecified "unexpected events" had occurred.

4. Discussion

The aim of this study was to determine which types of trips are planned in advance and which are added or suppressed as the plan is carried out. It was hypothesised that discrepancies between planned and actual car use would be larger for households with more than one car, where both adults work, with higher incomes and with more children. The results partly supported this by revealing significantly larger differences between number of planned and actual *shopping* trips if the household had more than one car, between number of planned and actual *chauffeuring* trips if the household had children, and between number of planned and actual *leisure* trips if the household had a higher income. Number of workers in the household did however not yield any significant effects. One should also note, as the rather high correlations with number of trips in Table 3 shows, that owning more than one car, having children and having higher incomes not only yield more unplanned trips but more trips in total. Thus, the discrepancies are a result of a combination of high frequency and a degree of unplanned trips which is proportional to the frequency.

It was also hypothesised that households mainly underpredict trips due to *errors of omission.* The presence of underprediction was confirmed by comparing the planned car logs with the actual car logs. In the latter the households reported on average one unplanned trip per day. The hypothesis that *work* trips are habitual and therefore easily predicted gains support, since the smallest difference between the number of planned and executed trips is found for these trips. There are unplanned trips mainly for *shopping*, to various *leisure* activities and *chauffeuring*. This is a particularly strong tendency for households with more than one car. The results also indicate that many of the added trips have a shorter duration and distance than the planned trips. This is especially true in the case of *chauffeuring*. Perhaps these are trips that normally would be made by walking or cycling but perhaps due to bad weather or being delayed, they are made by car. One may also note that *chauffeuring* of children even to close destinations, in order to avoid possible dangers, is probably a common feature of car use of today.

The trip purpose *shopping* was, as expected, the least planned. Still, when considering the results from Jakobsson *et al.* (2002) comparing number of trips with the trip frequency during the week before the home visit, a significant reduction of shopping trips was observed in the experimental groups (planning and/or economic disincentives). This indicates that shopping trips are affected by planning and can be reduced. The households reported unplanned activities or unexpected events as the main reasons for their underprediction. This could probably be labelled as impulsive behaviour. However, it is difficult to infer whether the impulses are due to the individual or caused by the situation. In the case of *personal service* trips that contrary to expectation turned out to be mainly unplanned. It is possibly due to trips to get medical treatment, and as it is impossible to forecast acute illness it should not be called impulsive trips. These trips are triggered by specific needs that cannot be controlled. A further division of the characteristics of car use into habitual, planned, impulsive and compulsive may be warranted. The latter trips are not under volitional control and thereby insensitive to any TDM measure.

An indication of the existence of *errors of commission* was also found. Households reported that trips were cancelled due to unexpected events, such as bad weather and illness. These types of cancellations probably affect all types of trips equally.

I conclude with noting some methodological limitations. Filling out a prospective car log for a whole week in advance is likely to differ from spontaneous planning which has been found to have a relatively short time horizon and is interwoven with executing the plan (Doherty *and*

Miller, 2000). This could add to the explanation to why some trips which probably are under volitional control were added during the week. One may plan one, two or three days in advance and this trip would still not be in the prospective car log, if it was at the end of the week. Furthermore, the households were not explicitly told the reason for making the plan. Since economic incentives were offered, this should have motivated a car use reduction goal. The prospective car log may have been interpreted as a tool to achieve such a goal. It is possible then that the households made a more unrealistic plan than if these economic incentives had been absent. Finally, underprediction may also reflect a general response bias (Gärling *et al.*, 1998). For example, one may state a low number of trips in order to appear less car dependent or set the car use reduction goal unrealistically high in order to please the researcher.

To categorise different trips is a difficult task and this is a first step towards satisfactory knowledge in this area. In future research one may be able to make a more correct categorisation of trips by asking car users to rate the degree of planning of the trips in a similar way to what was done in a field experiment by Garvill *et al.*, (2003). In order to assess whether trips are under volitional control or not, one may also follow the advice of Ajzen (2002) and add a measure of perceived behaviour control which may serve as an estimate of actual control.

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