Chapter 3

Acceptability and expected effects

Relationship between the acceptability, personal outcome expectations and the expected effects of transport pricing policies

Abstract
Acceptability and personal outcome expectations (i.e., the extent to which one expects to be better or worse off) of transport pricing policies were examined in relation to the expected effects of these policies on one's own car use, congestion and environmental problems. Car users who commuted frequently by car and experienced congestion on a regular basis evaluated two pricing measures, which were mainly aimed at either decreasing congestion (by tolling at congested areas) or environmental problems (by a differential kilometre charge based on car mass). For the policy mainly aimed to reduce congestion, acceptability was higher and personal outcome expectations were more positive when respondents expected reductions in congestion when the policy was implemented. The policy aimed to reduce environmental problems was more acceptable and respondents expected to be better off in general when they expected reductions in environmental problems after its implementation. Expectations, both about a decrease in congestion and environmental problems were related to respondents' personal outcome expectations of the policy mainly aimed to decrease environmental problems. We conclude that the acceptability of transport pricing policies are not necessarily low because car users expect negative effects on their car use, but rather because they are not be convinced that transport pricing policies will reduce congestion and environmental problems.

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Introduction

Private car use is associated with many individual advantages: car use is flexible, fast, convenient and comfortable. However, due to the increased ownership and use of cars, accessibility (e.g., congestion) and environmental problems (e.g., CO_2 emissions) have become more prevalent (OECD, 2001; Wee van, 2007). As a result, many argue that private car use and car ownership should be decreased (OECD, 1997; EU, 2003; UNEP, 1999; see also, Vlek, 2007).

Transport pricing policies aimed at increasing the financial costs of owning and using a car can be effective in reducing car use and car ownership (Santos, 2004a; Small & Gomez-Ibañez, 1998; Ubbels & Verhoef, 2007). Examples of transport pricing policies are kilometre charges, and congestion charges. Indeed, the congestion charge in London resulted in a decrease of 16% of the total number of vehicles entering the city centre between 2002 and 2006 (TfL, 2007; Santos, 2004b). The congestion charge in Stockholm resulted in an overall traffic reduction of 22% between January and August 2006 (Stockholmförsöket, 2006). However, potentially effective transport pricing policies are often not implemented because public support for these policies is low (Jones, 2003; Schade & Schlag, 2000). Therefore, understanding factors that affect the acceptability of transport pricing policies is an essential step towards a successful implementation of such policies.

This paper aims to examine factors that affect acceptability judgements of transport pricing policies. We define acceptability as an attitude towards transport pricing policies (cf., Bamberg & Rölle, 2003; Eriksson et al., 2006; 2008e; Jakobsson et al., 2000; Schade & Schlag, 2003). Attitudes reflect a psychological tendency that is expressed by evaluating a particular entity (such as pricing policies) with some degree of favour or disfavour (Eagly & Chaiken, 1993; 2007). Attitudes are determined by a set of accessible beliefs (Ajzen, 1991b; Eagly & Chaiken, 1998). Beliefs are the subjective probability that an attitude object (e.g., a policy measure) has certain outcomes (Ajzen, 1991a). Thus, the acceptability of transport pricing policies reflects the evaluation of the expected outcomes of these policies, and thus, the extent to which one expects to be generally better or worse off after the implementation of transport pricing policies (the latter is referred to as 'personal outcome expectations'; cf. Schade & Schlag, 2003). Those who mostly expect there to be disadvantages of transport pricing policies will find this policy unacceptable and have negative outcome expectations, whereas those who mostly foresee advantages will find this policy acceptable and have positive outcome expectations. In sum, we propose that the acceptability and personal outcome expectations are both indicators of one's attitude towards of transport pricing policies, and we assume that acceptability and personal outcome expectations of transport pricing policies are determined by the same beliefs about these policies.

Which outcomes are related to acceptability and personal outcome expectations of transport pricing policies?

Our main research interest is to examine which beliefs about pros and cons of transport pricing policies are related to the acceptability and personal outcome expectations of transport pricing policies. Transport pricing policies aim to make car use less attractive for individual car

users in order to reduce collective problems, such as congestion and environmental problems. Consequently, the acceptability and personal outcome expectations of transport pricing policies will depend on beliefs about the individual as well as collective outcomes of these policies. It is likely that transport pricing policies involve a conflict between individual and collective interests and as such reflect a social dilemma, that is, in order to decrease collective problems, individuals are faced with higher costs or infringements on their freedom (e.g., Garvill, 1999; Van Vugt, Meertens, & Van Lange, 1995; Van Vugt et al., 1996).

Literature on the acceptability of transport pricing policies indeed indicates that beliefs about individual and collective outcomes of transport pricing policies are important for the acceptability of these policies (e.g., Bamberg & Rölle, 2003; Eriksson et al., 2006; Gärling et al., 2008; Jakobsson et al., 2000; Schade & Schlag, 2003). On the one hand, car users may expect a decrease in their own car use when transport pricing policies are implemented, which is generally considered as an infringement on one's freedom (Jakobsson et al., 2000). If car users expect to reduce their own car use as a result of the implementation of transport pricing policies, they evaluate these policies as less acceptable (Jakobsson et al., 2000), and they probably will expect to be worse off in general, reflecting negative personal outcome expectations.

On the other hand, the acceptability of transport pricing policies appears to be related to the expected effects of these policies on car-related problems in society (Gärling et al., 2008; Rienstra et al., 1999). If people expect car use in general to decrease, they probably expect problems resulting from car use, such as congestion and environmental problems, to decrease as well. Reductions in car-related problems will not only benefit society as a whole, but individuals can benefit from it as well, for example when travel times or noise levels decrease. Consequently, if car users expect that transport pricing policies decrease car-related problems, acceptability levels may increase and people may also expect to be better off in general, reflecting positive personal outcome expectations.

To the authors' knowledge, the relative importance of the expected individual and collective outcomes has not been studied yet. That is, are acceptability and personal outcome expectations most strongly related to individual or to collective outcomes when they are evaluated in combination?

It is often assumed that people a priori serve their self-interests (Lindenberg & Steg, 2007; Moore & Loewenstein, 2004). The expected reductions in one's own car use typically reflects a focus on self-interest (Jakobsson et al., 2000). Hence, if car users indeed focus on their self-interest, it may be expected that the acceptability and personal outcome expectations mainly depends on the expected effects of transport pricing policies on one's own car use. However, social dilemma theory (Dawes, 1980) and goal framing theory (Lindenberg & Steg, 2007) suggest that people do not solely serve their self-interests, but consider collective interests as well. Indeed, several studies reveal that people consider collective outcomes to be important, next to individual outcomes (e.g., De Groot & Steg, 2008; Stern, 2000; Stern & Dietz, 1994; Thøgersen, 1996). This implies that both beliefs on individual and collective outcomes should predict the acceptability and personal outcome expectations of transport pricing policies. Reductions in congestion levels and environmental problems are generally perceived as positive outcomes for the collective (Joireman, Lasane, Bennett, Richards, & Solaimani, 2001; Joireman, Van Lange, & Van Vugt, 2004; Gärling, Fujii, Gärling, & Jakobsson, 2003), but individuals may also benefit when congestion decreases and environmental quality improves.

We aim to examine the relative importance of expected individual and collective outcomes of

transport pricing policies for their acceptability and personal outcome expectations. We included three beliefs that proved to be predictive of the acceptability of transport pricing policies (see above) and that vary in the extent to which they reflect egoistic and collective interests: the expected effects on one's own car use, congestion and environmental problems. Based on social dilemma theory (Dawes, 1980), goal framing theory (Lindenberg & Steg, 2007), and the studies discussed above, we assume that beliefs on individual and collective outcomes will both predict the acceptability and the personal outcome expectations of transport pricing policies. More specifically, we expect that the acceptability and personal outcome expectations of transport pricing policies are negatively related to beliefs about individual outcomes (i.e., the expected effects on one's own car use), and positively to beliefs on collective outcomes of these policies (i.e., the expected on congestion and environmental problems). As positive collective outcomes of transport pricing policies (i.e., expected reductions in congestion and environmental problems) may benefit the collective as well as individuals themselves, we expect that reductions in congestion and environmental problems are more strongly related to the acceptability and personal outcome expectations of policies than the expected effects on one's own car use.

Objectives of transport pricing policies and outcome expectations

The extent to which transport pricing policies are likely to reduce various car-related problems, such as congestion and environmental problems, differs across different types of policies, depending on the main objective of the particular policy (for an overview of different objectives of transport pricing policies, see Verhoef, 2008). People are likely to have a general idea about the objectives and consequences of different policies, even when the objectives of policy measures are not explicitly mentioned. For example, the implementation of tolls during rush hours is likely to be perceived by the public as a policy aimed at reducing congestion, while increasing levies for cars on the basis of emission levels is likely to be perceived as a policy aimed at improving environmental conditions. People take the extent to which they expect specific transport pricing policies to achieve their objectives into account when they evaluate the outcomes and acceptability of these policies (cf., Gaunt et al., 2007). Therefore, we expect that when a transport pricing policy mainly aims to decrease congestion, the acceptability and personal outcome expectations of this policy particularly depend on its expected effects on congestion. Similarly, when the main objective of a transport pricing policy is to decrease environmental problems, the acceptability and personal outcome expectations of this policy are likely to depend most strongly on its effects on environmental problems. To test this assumption, two policy measures that are linked to the beliefs we selected were include in this study. The first policy measure is a toll charge at specific bottlenecks on highways, which is mainly aimed at reducing congestion levels. The second policy is a differential kilometre charge related to car mass, which mainly aims to improve environmental quality.

Hypotheses

We tested three hypotheses. First, we assume that acceptability and personal outcome expectations are both indicators of one's attitude towards transport pricing policies. Hence, we hypothesise that acceptability and personal outcome expectations of transport pricing policies are positively correlated to each other (Hypothesis 1). Related to this, we expect that

acceptability judgements and personal outcome expectations of transport pricing policies are determined by the same beliefs about the expected outcomes of these policies. Therefore, we expect that beliefs on the expected effect of transport pricing policies on one's own car use, congestion and environmental problems predict their acceptability and personal outcomes expectations in a similar way.

Second, we hypothesise that the acceptability and personal outcomes expectations of transport pricing policies are determined by beliefs on expected collective and individual outcomes, and that acceptability and personal outcomes expectations are mainly determined by the expected effects on congestion and environmental problems (Hypothesis 2).

Third, we hypothesise that the acceptability and personal outcome expectations of the toll charge (mainly aimed at reducing congestion) depend most strongly on its expected effects on congestion, while the acceptability and personal outcome expectations of the car-mass-dependent kilometre charge (mainly aimed at improving the environmental quality) depend most strongly on its expected effects on environmental problems (Hypothesis 3).

Method

Respondents and procedure

As part of a multidisciplinary project, a questionnaire study was carried out among a panel of a Dutch market research institute. Respondents filled out a computerised questionnaire via the Internet. Eight cases were excluded from further analyses, because the time they used to fill out the questionnaire was unrealistically short and identical answers (over 75%) were given on crucial items. Analyses were conducted for the remaining 507 respondents.

This study focuses on a specific sample of car users, that is, commuters who experience congestion on a regular basis. These car users probably find transport pricing policies unacceptable, because they have a high annual mileage and thus are most likely to be affected by transport pricing policies (Jaensirisak et al., 2005). All respondents indicated in a pre-study conducted by the market research institute that they experienced congestion at least two times a week during the morning rush hour while commuting to work by car. On average, respondents commuted 4.7 days a week (SD = 0.74), of which they experienced congestion 3.6 days a week (SD = 1.15). The average respondent's commute (one way) was almost 50 kilometres (M = 46.7, SD = 34.49). Respondents with a relatively high income and education level were overrepresented, which is comparable to other samples of Dutch commuters (Steg, 2005).

Questionnaire

Respondents evaluated two pricing measures: (1) a toll charge at specific bottlenecks on Dutch highways and (2) a differential kilometre charge related to car mass. Four different scenarios were designed for the toll charge, and seven versions were designed for the kilometre charge. Below, we provide detailed descriptions of all versions of both pricing measures. Respondents first evaluated one version of the toll charge. The specific version was randomly generated by the computer. Next, participants evaluated a randomly generated version of the differential kilometre charge[1].

For both the toll charge and the kilometre charge, different scenarios were designed.

However, for this paper we are interested in studying how the expected effects of the toll charge on one's own car use, congestion and environmental problems were related to (overall) acceptability judgements and (overall) personal outcome expectations of the toll charge and car-mass-based kilometre charge. To do so, Box' M tests were used to test if it is valid to conduct analyses across the different scenarios of both policy measures. Box' M tests indicate the consistency of covariance across different scenarios, that is, the extent to which the relationship between dependent and independent variables is consistent. Homogenous covariance matrices imply that the relationship between the dependent and independent variables are similar for all scenarios, and thus that it is valid to conduct analyses across different scenarios.

Toll charge

The toll charge implied that every car user had to pay when passing specific structural bottlenecks on roads in The Netherlands. It was explained that toll costs would be additional to other costs of car use, and that the revenues would be used to build new roads and to improve existing roads.

The extent to which the toll charge was differentiated varied systematically, resulting in four versions of the toll charge. Each respondent evaluated one of these versions. The first scenario introduced a flat charge, which implied that all car users passing a specific bottleneck would have to pay €1.00 (N = 113). Second, a variable charge was described, implying that the charge for passing a bottleneck would be €2.00 during weekday rush hours (i.e., between 7.00 and 9.00 a.m. and 5.00 and 7.00 p.m.); during the remaining hours no toll would be charged (N = 147). Third, a more detailed variable charge was described. Again, car users had to pay during weekday rush hours, but this time price differed for various times during rush hours (N = 125) (see Table 3.1). Finally, a dynamic toll charge implied that the price level would depend on the degree of road congestion, varying from €0.00 (no congestion) to a maximum of €5.00 (high congestion level) (N = 122).

Box' M tests revealed homogeneity of covariance across the expected effects on one's own car use, congestion, environmental problems and the acceptability of the toll charge (F = 1.20, ns), as well as across the expected effects on one's own car use, congestion, environmental problems and personal outcome expectations (F = 1.41, ns). This implies that for all four versions of the toll charge, acceptability and personal outcome expectations correlated equally strong in the same direction to the expected effects on one's own car use, congestion and environmental problems. Therefore, we assume that it is appropriate to combine the data for all four versions of the toll charge.

Car-mass-dependent kilometre charge

The car-mass-dependent kilometre charge implied that every car user had to pay for each car kilometre driven. It was explained that the price level depended on car mass. Price levels for three weight categories were shown to all respondents: 4 €cents/km for a light car, 5 €cents/km for a car with an average weight, and 6 €cents/km for a heavy car. To make sure that the policy was clear to respondents, it was indicated that total costs for an average household (driving 16,000 kms a year) would increase by €53 per month (for a light car), €66 (for a car with average weight), or €79 (for a heavy car)[2].

The allocation of revenues was systematically varied, resulting in seven different versions of this kilometre charge: revenues could be (1) allocated to general public funds (N = 79), (2) used to improve the transport system in general (N = 74), (3) returned to car users (N = 68), (4) used

Table 3.1 Overview of pricing scheme of the third scenario of the toll charge

Charge level	Time of day	
	morning rush hour	evening rush hour
€0.50	6.00 – 7.00	16.00 – 17.00
€1.00	7.00 – 7.30	17.00 – 17.30
€1.75	7.30 – 8.00	17.30 – 18.00
€2.50	8.00 – 8.30	18.00 – 18.30
€1.75	8.30 – 9.00	18.30 – 19.00
€1.00	9.00 – 9.30	19.00 – 19.30
€0.50	9.30 – 10.00	19.30 – 20.00
no charge	9.30 – 10.00	20.00 – 6.00

to improve public transport (N = 82), (5) used to abolish road taxes (N = 66), (6) used to decrease fuel taxes (N = 69), or (7) used to build new and improve existing road infrastructure (N = 69). Respondents were randomly assigned to one of these seven versions of the kilometre charge.

Box' M tests revealed that the covariance matrices were homogeneous across the seven versions of the car-mass-dependent kilometre charge for the expected effects on own car use, congestion, environmental problems and acceptability (F = 1.11, ns) as well as for the expected effects on one's own car use, congestion, environmental problems and personal outcome expectations (F = .99, ns). Therefore, the relationships between acceptability and personal outcome expectations and the expected effects on own car use, congestion and environmental problems were similar for all seven versions of the car-mass-dependent kilometre charge. Hence, overall analyses could be conducted for the car-mass-dependent kilometre charge.

Measurement of dependent and independent variables

After reading the descriptions of the toll charge, respondents first indicated the expected effects of the pricing measures on: (1) their own car use (viz., how likely is it that you will decrease the number of kilometres you drive if this measure would be implemented?), (2) congestion (viz., how likely is it that congestion levels will decrease if this measure would be implemented?), and (3) environmental problems (viz., how likely is it that environmental problems will decrease if this measure would be implemented?). Scores could range from 1 (very unlikely) to 7 (very likely).

Next, the two dependent variables were measured. Respondents indicated their personal outcome expectations when the toll charge would be implemented (viz., if you consider all pros and cons of this measure, do you expect to be better or worse off if this measure would be implemented?), on a scale from 1 (considerably worse off) to 7 (considerably better off). Finally, respondents indicated how acceptable the toll charge was to them (viz., how acceptable is this policy measure to you?) on a scale from 1 (very unacceptable) to 7 (very acceptable).

After reading and evaluating the toll charge, respondents read the description of the car-mass-dependent kilometre charge and answered the same questions as they did for the toll charge.

Results

Toll charge

Paired t-tests indicated that the mean acceptability of the car-mass-dependent kilometre

charge was slightly higher than the acceptability of the toll charge, but no differences were found between the policy measures in terms of personal outcome expectations (see Table 3.2). If the car-mass-dependent kilometre charge was implemented, respondents expected their own car use and environmental problems to decrease somewhat more than if the toll charge was implemented. Congestion levels were expected to decrease more after the implementation of the toll charge as opposed to the car-mass-dependent kilometre charge.

As expected, we found a strong and positive correlation between acceptability levels and personal outcome expectations of the toll charge, indicating that the more respondents expected generally to be better off after the implementation of the toll charge, the more the charge would be acceptable to them ($r = .63$, $p<.001$). Furthermore, correlations showed that the acceptability of the toll charge was higher and personal outcome expectations were more positive when respondents expected congestion and environmental problems to decrease (see Figure 3.1a and 3.1b). Also, those who indicated that they would reduce their car use as a result of the toll charge found the charge more acceptable and had more positive personal outcome expectations[3]. In addition, respondents who expected that they would reduce their own car use expected congestion and environmental problems to decrease as well. Also, those who expected congestion levels to decrease expected a reduction of environmental problems too.

Two regression analyses were conducted to test how acceptability and personal outcome expectations of the toll charge were related to the expected effects of the charge on one's own car use, congestion and environmental problems. The expected effects of the toll charge on one's own car use, congestion and environmental problems explained 31% of the variance in acceptability judgements of this policy measure ($F (3, 503) = 73.9$, $p<.001$; Figure 3.1a). Both the expected effects on congestion and environmental problems contributed significantly to the explanation of respondents' acceptability judgements. Acceptability of the toll charge was higher when respondents expected congestion to decrease ($\beta = .42$, $p<.001$), and when they expected a reduction of environmental problems ($\beta = .22$, $p<.001$), albeit to a lesser extent. The expected effects on one's own car use did not significantly contribute to this regression model.

Thirty percent of the variance in personal outcome expectations was explained by the expected effects of the car-mass-dependent kilometre charge on one's own car use, congestion and environmental problems ($F (3, 503) = 71.1$, $p<.001$; Figure 3.1b). The pattern of the results was similar to the explanation of acceptability judgements of the toll charge. Personal outcome expectations were positively and significantly related to the expected effects of the toll charge on congestion ($\beta = .37$, $p<.001$) and environmental problems ($\beta = .16$, $p<.001$), but not to the expected effects of the toll charge on one's own car use.

Table 3.2. Mean scores and standard deviations for acceptability, expected personal outcomes and the expected effects on one's own car use, congestion and environmental problems of the toll charge and car-mass-dependent kilometre charge. Paired t-tests indicate the differences between the evaluations of the toll charge and car-mass-dependent kilometre charge

	toll charge	car-mass-dependent km charge	
	M (SD)	M (SD)	t (506)
Acceptability	2.9 (1.61)	3.3 (1.85)	-4.9 **
Personal outcome expectations	2.5 (1.33)	2.5 (1.37)	0.4
Expected effects on car use	2.5 (1.57)	2.7 (1.63)	-4.3 **
Expected effects on congestion	2.8 (1.55)	2.6 (1.45)	2.2 *
Expected effects on environmental problems	2.5 (1.42)	2.9 (1.58)	-5.4 **

Note. Scores could range from 1 (low) to 7 (high); paired t-tests are reported
*p<.05; ** p<.00

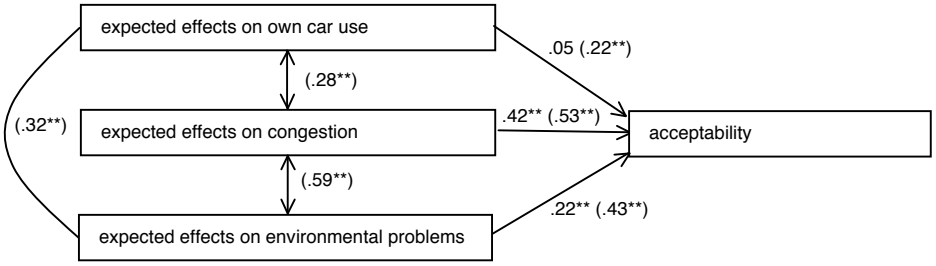

Figure 3.1a Regression analysis of expected effects on own car use, congestion and environmental problems on acceptability of toll charge (β coefficients). Bivariate correlations are given in brackets (** p<.001)

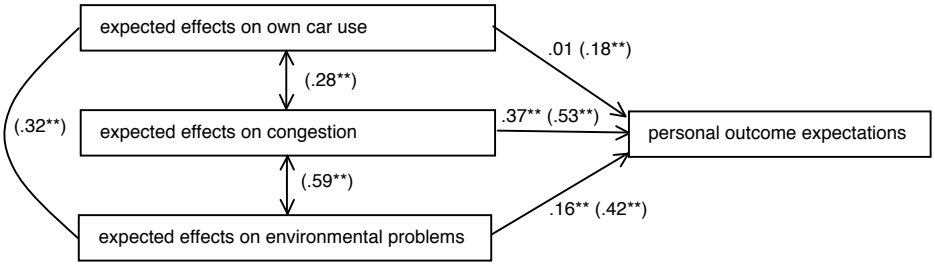

Figure 3.1b Regression analysis of expected effects on own car use, congestion and environmental problems on personal outcome expectations of toll charge (β coefficients). Bivariate correlations are given in brackets (*p<.05; ** p<.001)

Car-mass-dependent kilometre charge

As expected, a strong and positive correlation was found between the acceptability and personal outcome expectations of the car-mass-dependent kilometre charge (r = .68, p<.001). Bivariate correlations showed that the car-mass-dependent kilometre charge was more acceptable when respondents expected reductions in congestion and environmental problems (Figure 3.2a). Similarly, respondents had more positive personal outcome expectations when they believed that congestion and environmental problems would decrease (Figure 3.2b). Correlation coefficients showed that acceptability was somewhat higher and personal outcome expectations were slightly more positive when respondents expected a reduction in their own car use[4]. Similar to the toll charge, respondents who expected to reduce their own car use expected reductions in congestion and environmental problems as well. Those who expected decreased congestion levels also expected a decrease in environmental problems.

Twenty-four percent of the variance in acceptability of the car-mass-dependent kilometre charge was explained by the expected effects of this policy measure on one's own car use, congestion and environmental problems (F (3, 503) = 53.4, p<.001; Figure 3.2a). Only the expected effects on environmental problems contributed significantly to this model. The car-mass-dependent kilometre charge was more acceptable when respondents expected environmental problems to decrease (β = .60, p<.001).

The expected effects of the car-mass-dependent kilometre charge on one's own car use,

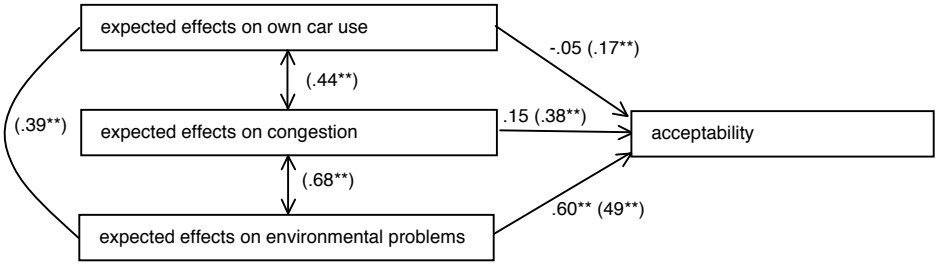

Figure 3.2a Regression analysis of expected effects on own car use, congestion and environmental problems on acceptability of car-mass-dependent kilometre charge (β coefficients). Bivariate correlations are given in brackets (** p<.001)

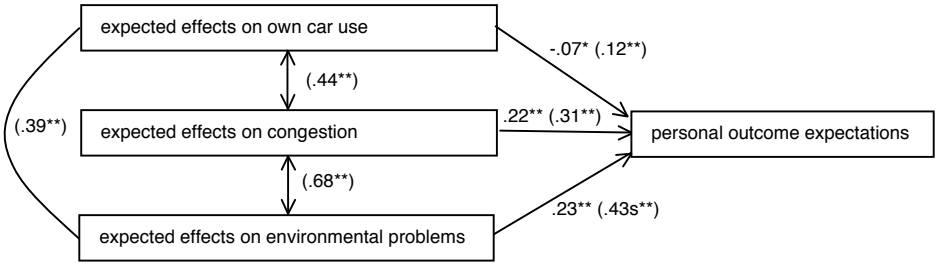

Figure 3.2b Regression analysis of expected effects on own car use, congestion and environmental problems on personal outcome expectations of car-mass-dependent kilometre charge (β coefficients). Bivariate correlations are given in brackets (* p<.05; ** p<.001)

congestion and environmental problems explained 22% of the variance in personal outcome expectations of this policy measure (F (3, 503) = 46.2, p<.001; Figure 3.2b). Respondents expected more positive personal outcomes when environmental problems (β = .23, p<.001) and congestion (β = .22, p<.001) were expected to decrease after the implementation of the car-mass-dependent kilometre charge. Moreover, respondents expected slightly more negative personal outcomes when they expected a decrease in their own car use as a result of the car-mass-dependent kilometre charge (β = -.07, p<.05).

Discussion

The aim of this paper was to examine to relative importance of the expected effects of two transport pricing policies on one's own car use, congestion and environmental problems for the acceptability and personal outcome expectations of these policies. First, we studied the relationship between the acceptability and personal outcome expectations. As expected, we found for both the toll charge and the car-mass-based kilometre charge a strong and positive correlation between acceptability and personal outcome expectations: the better off respondents expected to be after the implementation of the policy measures, the more acceptable they were to them. The strong and positive correlation between acceptability and personal outcome expectations supports our assumption that both constructs reflect an attitude towards transport pricing policies.

As expected, acceptability and personal outcome expectations depended on individual's beliefs of expected outcomes of transport pricing policies. In the case of the toll charge, acceptability and personal outcome expectations were most strongly predicted by the expected effects on congestion when the other beliefs on the expected effects were controlled for. For the car-mass-dependent kilometre charge, acceptability and personal outcome expectations were particularly related to the expected effects on environmental problems when the other beliefs on the expected effects were controlled for. In addition, personal outcome expectations of the car-mass-dependent kilometre charge were also related to the expected effects on congestion, and on one's own car use, although the latter relationship appeared to be very weak. Thus, as hypothesised, acceptability and personal outcome expectations depended most strongly on the extent to which respondents expected congestion and environmental problems to reduce. In contrast to our expectation, the expected effects on one's own car use hardly played a role in the evaluation of the two policy measures. This indicates that our respondents particularly considered a reduction of collective problems to be important, while expected individual outcomes did not play a significant role.

Bivariate correlations indicated that transport pricing policies were more acceptable and commuters expected to be slightly better off when they expect to reduce their own car use. These results are in contrast to results of Jakobsson et al. (2000), who found that the acceptability of transport pricing policies decreased when car users expected to reduce their own car use. Jakobsson et al. (2000) stressed that implementing transport pricing policies results in involuntarily behaviour change, which explains why acceptability decreases when car users expect reductions in their car use. However, car users may be willing to change their car use if they expect car-related problems to reduce. Consequently, they may be in favour of transport pricing policies because they expect these policies to help them to reduce their car use, and thus, to reduce collective problems (cf., Zlatev, Pahl, & White, 2010). Future studies should examine this explanation further.

Results revealed a similar pattern when looking at how the expected effects of both policy measures are related to personal outcome expectations and acceptability, again providing support for our assumption that personal outcome expectations and acceptability both reflect an attitude towards transport pricing policies. In case of the car-mass-dependent kilometre charge, personal outcome expectations depended on the expected effects on congestion and environmental problems, whereas its acceptability depended on the expected effects on environmental problems only. However, the correlations between acceptability and personal outcome expectations on the one hand, and the expected effects of this policy on the other hand were very similar, which supports our hypothesis. Also, as expected, the acceptability and personal outcome expectations were more strongly related to the expected effects on environmental problems than on the expected effects on congestion.

Considering that our sample consisted of commuters who experienced congestion on a regular basis, the results are striking. Previous studies showed that those who prefer to commute by car typically focus on their self-interests (Abrahamse et al., 2009; Van Vugt et al., 1996). However, our results indicate that besides self-interest, car commuters consider collective interests as well, such as environmental quality. Of course, we cannot generalise our results to Dutch car users or the Dutch population in general. Future studies are needed to examine to what extent our results can be replicated in other samples.

As in other studies, we used single items to measure the acceptability, personal outcome

expectations, and expected effects of pricing measures (Eriksson et al., 2006; 2008d; Schade & Schlag, 2003). In particular, the measurement of beliefs on the expected effects of transport pricing policies on environmental problems with single items has a drawback. On the basis of this study, we cannot pinpoint which specific environmental problems are relevant to car drivers, because we do not know which environmental problems respondents had in mind when they filled out the questionnaire. For example, respondents could have considered CO_2 emissions, particulate matter or smog levels. Moreover, people may have different opinions on various environmental problems, which we could not assess in this study. Future studies are needed to examine in more detail to what extent different types of environmental effects of transport pricing policies are related to the acceptability and personal outcome expectations of these policies.

Respondents evaluated various versions of toll charge and car-mass-dependent kilometre charge. Car users' acceptability levels and personal outcome expectations did not differ across the four versions of the toll charge. The seven versions of the car-mass-dependent kilometre charge were evaluated differently on acceptability and personal outcome expectations (see also, Schuitema & Steg, 2008: Chapter 2 of this thesis). However, Box' M tests clearly indicated that covariance matrices were consistent across seven versions of the car-mass-dependent kilometre charge, which indicates homogeneity of the relationship between the dependent and independent variables included in this study. In other words, acceptability and personal outcome expectations correlated equally strong and in the same direction to the expected effects on one's own car use, congestion and environmental problems for all versions of this policy measure, even though acceptability and personal outcome expectations differed for the seven versions of the car-mass-dependent kilometre charge. Therefore, it can be assumed that differences in the mean scores of acceptability and personal outcome expectations across versions of this policy measures did not affect our results.

Overall, the toll charge and car-mass-dependent kilometre charge had low acceptability levels, and respondents expected to be slightly worse off after their implementation. Also, respondents hardly expected their own car use, congestion and environmental problems to be affected by both policy measures. One may argue that the acceptability and personal outcome expectations of the policy measures were hardly related to the expected effects of one's own car use because people did not expect to change their own car in the first place. However, people also expected few changes in congestion and environmental problems, yet these factors were related to the acceptability and personal outcome expectations. This suggests that higher acceptability levels and more positive personal outcome expectations can be achieved when people expect reductions in car-related problems. Achieving this will be a major challenge, because people generally do not expect transport pricing policies to be effective. One strategy could be to first implement transport pricing policies in areas with serious car-related problems. In these areas, reductions in problems are most likely to be demonstrated, and if car users believe that a policy measure achieves its objective, it is deemed to be more acceptable. Consequently, the likelihood that, and to extent to which transport pricing policies achieve their objectives should be clearly communicated to the public before implementing transport pricing policies.

[1] An one-way Anova analyses showed that the acceptability and personal outcome expectations did not differ across the four versions of the toll charge ($F(3, 503) = 0.45$, $p = .72$; $F(3, 503) = 0.02$, $p = .99$, respectively). For the seven versions

of the car-mass-dependent kilometre charge, a significant main effect was found for the versions on acceptability ($F(6, 500) = 5.59$, $p < .001$) and on the personal outcome expectations ($F(6, 500) = 4.77$, $p < .001$). In this paper, we will not elaborate on the differences between the various versions per measure, because we are particularly interested in the relationships between acceptability and specific beliefs about the outcomes of the policy measures. The differences in acceptability judgments of the different versions of the car-mass-dependent kilometre charge are discussed elsewhere (Schuitema & Steg, 2008: Chapter 2 of this thesis)

[2] Cost increases for an average household (driving 16,000 kms a year) were estimated for each weight category. This implied that for a small car (€0.04 × 16,000 kms a year) costs would increase with €640 a year, (≈ €53,- a month). For a medium-sized car (€0.05 × 16,000 kms a year) costs would increase with €800 a year (≈ €66,- a month). For a heavy car (€0.06 × 16,000 kms a year) costs would increase with €960 a year (≈ €79,- a month).

[3] One could reason that especially car users with a negative attitude towards car use probably intent to reduce their car use (Ajzen, 1991d), and therefore, they may find pricing measure acceptable. This could explain the positive correlations between expected reductions in one's own car use and the acceptability and personal outcome expectations of the toll charge. We were able to test this explanation because in the questionnaire a measure of attitude towards car use was included as well (using four bipolar scales with items like 'car use is very pleasant/ unpleasant' on 7-point scales; $\alpha = .89$; $M = 5.5$; $SD = 1.1$). Attitudes towards car use were very weakly related to the expected effects of the toll charge on one's own car use ($r = .09$, $p < .001$), indicating that people's attitude towards car use is very weakly related to their beliefs about the consequences of the toll charge on their own car use. So, a negative attitude towards car use cannot explain that the toll charge is more acceptable and respondents expect to be generally better off (reflecting a positive personal outcome expectations) when they expect reductions in their own car use.

[4] As for the toll charge, the correlation between attitudes towards car use and the expected effects on one's own car use were calculated for the car-mass-dependent kilometre charge ($r = -.07$, ns). Again, this correlation indicated that the positive relationships between the expected effects on one's own car use on the one hand and the acceptability and personal outcome expectations of the car-mass-dependent kilometre charge on the other hand were not due to a negative attitude towards car use.