

When Are Transport Pricing Policies Fair and Acceptable?

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Abstract This study examines the relative importance of six policy outcomes related to different fairness principles for the perceived fairness and acceptability of pricing policies aimed at changing transport behaviour. The fairness and acceptability of six different types of transport pricing policies were systematically higher if policy outcomes were related to environmental justice and equality. The policy measures were evaluated as more acceptable and fair when respondents believed that future generations, nature and the environment were protected (reflecting environmental justice), and to a lesser extent, when everybody was equally affected by the policy outcomes (reflecting equality), irrespective of absolute differences in fairness and acceptability of the policies. Policy outcomes reflecting egoistic concerns (e.g. being financially worse off and being worse off than others) and equity (e.g. proportional to people's income and contribution to problems) were related to the fairness and acceptability of some policy measures, but no systematic pattern was found across six policy measures. This suggests that policy outcomes related to distributions that focus on collective considerations appear to be more important for the fairness and acceptability of transport pricing policies than those focusing on individual interests. Theoretical and practical implications of these results are discussed.

Keywords Acceptability · Fairness · Fairness principles · Policies · Transport

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Introduction

Public policies aimed at reducing social problems often involve that some people should change their behaviour or are restricted in their freedom to safeguard collective qualities. For example, transport policies are implemented to protect environmental quality or to reduce traffic accidents, and public health is protected by increasing taxes on alcohol and cigarettes. Although such policies generally increase overall quality of life of the population, they may have negative consequences for some groups. For example, transport pricing policies may reduce environmental problems and congestion, but they can affect car drivers negatively as travel costs increase or because some people can no longer afford to make certain trips. The extent to which the collective and individuals are affected by policies depends on the way policy outcomes are distributed. Public acceptability of such policies tends to be low when the distribution of outcomes is believed to be unfair (Cvetkovich & Earle, 1994; Tyler, 2000). But which distribution of costs and benefits is perceived to be fair and acceptable? This is a highly relevant question, as policy makers are reluctant to implement policies that lack public support.

Little is known about which distribution of policy outcomes is considered to be most fair and acceptable, especially with respect to public policies. Important questions are: How should costs and benefits of public policies be distributed to increase fairness and acceptability of these policies? Which type of distributional fairness do people prefer? This study aims to examine how the evaluation of the distribution of costs and benefits (i.e. distributional fairness) is related to the evaluation of the fairness and acceptability of public policies. As a case in point, we focus on a public policy for which perceived fairness and acceptability play a key role, that is, transport pricing policies. Transport pricing policies are aimed at reducing the negative effects of car use and car ownership, including environmental problems and congestion, by increasing the costs of the undesired behaviour (e.g. extensive car use, the purchase of energy inefficient cars) or decreasing the costs of the desired behaviour (e.g. reduced kilometrage, purchase of energy-efficient cars).

Various studies showed that the perceived fairness and acceptability of transport pricing policies are strongly related (e.g. Bamberg & Rölle, 2003; Eriksson, Garvill, & Nordlund, 2006, 2008; Fujii, Gärling, Jakobsson, & Jou, 2004; Jakobsson, Fujii, & Gärling, 2000; Odeck & Bråthen, 1997). In these studies, acceptability of transport pricing policies is defined as an attitude, that is, an evaluation of the transport pricing policy with some degree of favour or unfavour, which is based on balancing the expected outcomes of transport pricing policies. Fairness refers to the evaluation of the reasonability of the distribution of these outcomes. Hence, fairness refers to judgements about distributive justice (Tyler, 2000) and reflects the extent to which people consider the distribution of outcomes of a policy generally as fair or unfair. The outcomes of transport pricing policies can be distributed in different ways, which is related to different fairness principles, as we will explain below. Surprisingly, little is known about how the distribution of policy outcomes reflected different fairness principles affect the fairness and acceptability of the transport pricing policies. The main aim of this paper is to get a better understanding of this.

Outcomes of Transport Pricing Policies, Fairness, and Acceptability

To evaluate the fairness of policies, people compare the outcomes of a policy with a reference point (cf., Kahneman, 1992). In general, three different types of comparisons can be made, each based on a different reference point: intrapersonal, interpersonal and intergenerational comparisons. Below, we explain these three types of comparisons. Based on this, we identify six different distributions of policy outcomes that are relevant for the evaluation of the fairness and acceptability of transport pricing policies (see also Fig. 1).

Intrapersonal Temporal Comparisons

Intrapersonal temporal comparisons refer to a comparison of policy outcomes with previous personal outcomes, independent of outcomes of others (Loewenstein, Thompson, & Bazerman, 1989). Thus, an intrapersonal temporal comparison reflects that people compare their current outcomes (i.e. outcomes before a policy is implemented) with outcomes of a policy for themselves after a policy is implemented. In this case people focus on outcomes for themselves. Such comparisons are often associated with a focus on self-interest (e.g. Bazerman, Loewenstein, & White, 1992; Bazerman, White, & Lowenstein, 1995; Bethwaite & Tompkinson, 1996; Handgraaf, Dijk, Wilke, & Vermunt, 2004; Loewenstein et al., 1989). With respect to the fairness and acceptability of transport pricing policies, a relevant intrapersonal temporal comparison involves a comparison of ones *financial* costs before and after the

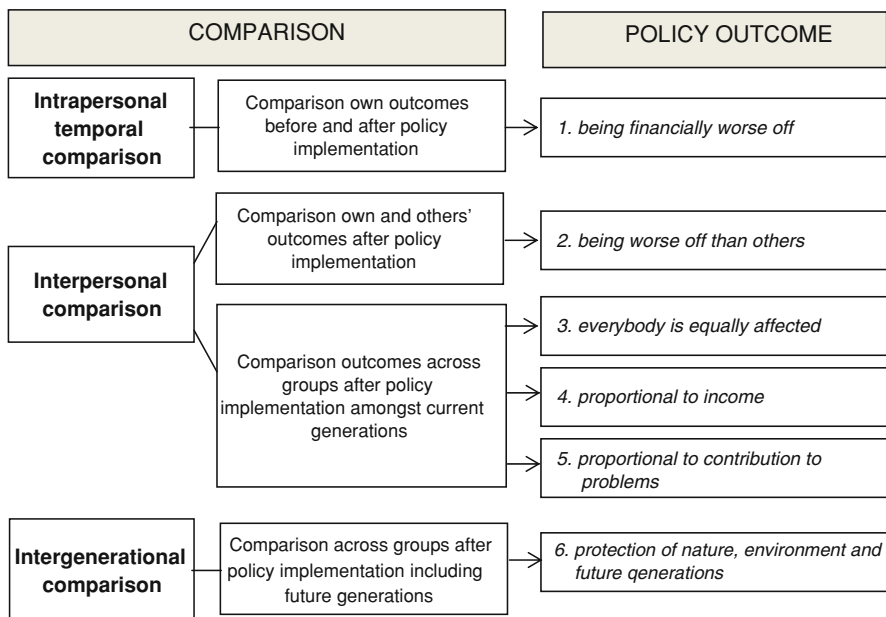


Fig. 1 A classification of policy outcomes

implementation of transport pricing policies. So, the first policy outcome we distinguish reflects the extent to which one is financially worse off after a policy implementation (1: being financially worse off).

Interpersonal Comparisons

Interpersonal comparisons imply that others' outcomes are taken into account when people evaluate the fairness and acceptability of a policy, that is, how policies affect different individuals or groups in society. Two different interpersonal comparisons can be made. First, one can compare one's own outcomes with the outcomes of others, which reflects to what extent one is worse or better off than others (2: being worse off than others). This policy outcome reflects self-interest as well as it refers to negative outcomes for oneself relative to others. As a result it can be expected that policies are considered to be less fair and less acceptable when people expect to be worse off than others after they are implemented (cf., Diekmann, Samuels, Ross, & Bazerman, 1997).

Second, one can compare the outcomes of policies across individuals or groups in the population. It's often advocated that it is most fair to treat all people equally, reflecting the fairness principle equality (Deutsch, 1975, 1985), particularly in realm of policies that aim to safeguard collective good such as transport policies (Wilke, 1991). Hence, a third relevant policy outcome, based on the equality principle, is that transport policies affect everybody to the same extent (3: everybody is equally affected).

On the other hand, it has also been argued that people should be treated equally either in proportion to personal characteristics or to one's contribution to a problem, reflecting the fairness principle equity (Adams, 1965; Walster, Berscheid, & Walster, 1973). A personal characteristic that is particularly relevant in the case of transport pricing policies is one's financial situation, because it is often argued that lower income groups should not be affected disproportionately (see, Ubbels & Verhoef, 2007). Hence, a relevant policy outcome that is based on the equity principle is distributing the outcomes of transport pricing policies in proportion to one's income. We defined the fourth policy outcome as: low income groups are affected less strongly than high income groups when transport pricing policies are implemented (4: policy outcomes proportional to income).

Policy outcomes can also be distributed in proportion to people's contribution to problems. With respect to transport pricing policies, people's contribution to car-related problems, such as congestion or emissions, is a relevant criterion that could be used to evaluate the fairness of the distribution of policy outcomes and the acceptability of policies (Button, 1993). This is reflected in our fifth policy outcome, based on the equity principle: those who contribute most to problems are most strongly affected by transport pricing policies (5: policy outcomes proportional to contribution to problems).

Intergenerational Comparisons

More recently, scholars argued that environmental justice is relevant for fairness judgements, which refers to the concept that nobody should be disproportionately be

exposed to environmental threats (Bullard, 1994; Bullard & Johnson, 2000). Clayton (2000) argues that environmental justice is not limited to current generations, but that future generations should be taken into account as well, which implies that intergenerational comparisons should be made (see also, Wade-Benzoni, 2002; Wade-Benzoni, Hernandez, Medvec, & Messick, 2008). Hence, environmental justice reflects the extent to which future generations are protected, by preserving natural resources. Environmental justice may be important for the fairness and acceptability of transport pricing policies, because these policies are generally aimed at preserving collective resources by reducing the environmental impacts of cars. Therefore, the sixth policy outcome that we distinguish concerns the extent to which nature, the environment, and future generations are protected (6: protection of nature, the environment, and future generations).

Relationship Between Fairness, Acceptability and Policy Outcomes

We assume that people's evaluation of the distribution of outcomes of transport pricing policies affect their evaluation of the fairness and acceptability of these policies. Which outcome distribution is most predictive of the fairness and acceptability of transport pricing policies probably depends on one's value orientation (Anderson & Patterson, 2008). It is often assumed that people *a priori* act upon their egoistic values, implying that they aim to maximise their self-interests (Moore & Loewenstein, 2004). The first two policy outcomes that we distinguished (i.e. being worse off financially and being worse off than others) reflect a concern with egoistic outcomes, as both refer to a specific concern with negative outcomes for oneself. Hence, if people are indeed merely concerned with self-interest, they probably find transport pricing policies unfair and unacceptable when they expect to be financially worse off or worse off than others after the implementation of a policy measure.

However, it has also been proposed that people do not only try to maximise their own interests, but they consider interests of the collective and act upon altruistic and biospheric values as well (De Groot & Steg, 2008; Stern, 2000; Stern & Dietz, 1994). In line with this, it has been argued that equality, equity, and environmental justice are important to people due to a collective concern (Lerner, 2003; Schwartz, 1977; Tyler, 2000; Wade-Benzoni & Tost, 2009). In addition, individuals may expect to personally benefit as well when policy outcomes are distributed on the basis of equality, equity, or environmental justice, for example because people feel good about themselves when taking care of others (e.g. Diekmann et al., 1997; Messick & McClintock, 1968; Wade-Benzoni & Tost, 2009). If people indeed care about collective outcomes, it can be expected that transport pricing policies are considered to be more fair and acceptable when policy outcomes are distributed on the basis of equality, equity, or environmental justice (i.e. if policy outcomes affect people equally, are proportional to one's income or one's contribution to problems, or if they protect of nature, the environment, and future generations).

Studies on fairness and acceptability of transport pricing policies indicate that collective considerations are indeed important, in addition to self-interest (De Groot & Steg, 2009; Eriksson et al., 2006). Also, studies in the energy field indicate that

the acceptability of policies aimed to promote energy conservation is related to collective considerations (e.g. Steg, Dreijerink, & Abrahamse, 2005). Solving collective problems related to car use appeared to be more important for the acceptability of transport pricing policies than individual outcomes (Schuitema, Steg, & Forward, 2010; Schuitema, Steg, & Rothengatter, 2010), suggesting that the fairness and acceptability for transport pricing policies are more strongly related to collective interests than to individual interests. Therefore, it may be expected that policy outcomes that reflect a concern with collective outcomes are perceived as more fair and acceptable than policy outcomes that reflect a concern with individual outcomes. Thus, it can be expected that a distribution of policy outcomes reflecting equality, equity, and environmental justice is more strongly related to the fairness and acceptability of transport pricing policies than the policy outcomes that reflect self-interest.

Are equality, equity, or environmental justice equally important for the evaluation of the fairness and acceptability of policies? Many studies indicate a general preference for an equal distribution of outcomes over equity (e.g. Eek, Biel, & Gärling, 1998, 2001; Kahneman, Knetsch, & Thaler, 1986; Loewenstein et al., 1989; Messick & Sentis, 1979; Messick & Schell, 1992), but these studies did not include environmental justice. Recent studies that did include environmental justice suggest that people have a strong preference for environmental justice as well. For example, Clayton (2000) found that environmental justice was considered to be more important in environmental conflicts than distributions based on equity and equality. So, there seems a general preference for equality and environmental justice. Therefore, it may be expected that fairness and acceptability of transport pricing policies are more strongly related to equality and environmental justice than to equity.

Fairness and Acceptability of Different Types of Transport Pricing Policies

Different policies have different cost and benefits, and consequently, the fairness and acceptability of transport pricing policies may differ for various types of policies (e.g. Eriksson et al., 2006; Steg, 1996). We assume that differences in the fairness and acceptability of policies are due to the fact that the costs and benefits of these policies are distributed differently. If this is true, the policy outcomes based on different fairness principles should predict fairness and acceptability in a similar way, that is, the same policy outcomes should consistently predict fairness and acceptability of different types of policies. To test this assumption and to test the robustness of our results, we will examine how the policy outcomes are related to the fairness and acceptability of six different transport pricing policies. These policies differ systematically on two characteristics that are important for the fairness and acceptability of policies, as explained below.

First, we distinguish transport pricing policies that aim to change car ownership to reduce the environmental impact per car (e.g. impose a tax on cars with high environmental impact) and transport pricing policies that aim to reduce car use (e.g. impose a tax on a high annual kilometrage). Policies that aim to reduce car ownership are generally evaluated as more acceptable than policies that aim to

reduce car use, because the latter usually requires more effort and reduces people's freedom (Poortinga, Steg, Vlek, & Wiersma, 2003; Steg, Dreijerink, & Abrahamse, 2006). To authors' knowledge, no studies examined differences in the perceived fairness between policies aimed at reducing car use versus policies aimed at changing car ownership. Considering that the perceived fairness and acceptability of policies are strongly correlated, it is likely that policies aimed to change car ownership are also considered to be more fair than policies aimed to reduce car use.

Second, transport pricing policies can imply increasing the price of undesired behaviour, for example purchasing a car with a high environmental impact or a high annual kilometrage. These policies are usually referred to as push measures. On the other hand, transport pricing policies can imply a decrease in the price of desired behaviour, for example purchasing a car with a low environmental impact or a low annual kilometrage. These policies are usually referred to as pull measures. Pull measures generally increase people's opportunities: the desired behaviour becomes more attractive while the consequences of the undesired behaviour do not change. Pull measures increase or, at least, do not decrease individual freedom of choice. Push measures, on the contrary, regulate people's behaviour in such a way that their options and freedom to move are restricted to some extent, since car use or the purchase of environmentally unsound cars becomes less attractive. Overall, push measures are evaluated as more coercive than pull measures, and as a result, push measures are generally considered to be less fair and acceptable than pull measures (Eriksson et al., 2006, 2008; Gärling & Schuitema, 2007; Schade & Schlag, 2003; Steg, 1996). Push measures are generally more effective in changing car use and car ownership, and consequently in reducing car-related problems, than pull measures (Gärling & Schuitema, 2007). A combination of push and pull measures may be more fair and acceptable than separate push or pull measures, because when push measures are combined with pull measures, problems are likely to be solved, while alternatives are provided as well.

This Study

In sum, we assume that the extent to which a transport pricing policy have particular outcomes, related to different fairness principles, predict the fairness and acceptability these policies. First, in line with previous studies, we hypothesise that fairness and acceptability of transport pricing policies are strongly and positively related to each other. Our main aim is to examine to what extent different distributions of policy outcomes are related to the fairness and acceptability of transport pricing policies. Our study is explorative, however, based on previous studies, we have the following expectations. First, we hypothesise that a distribution of policy outcomes reflecting the fairness principles equality ('everybody is equally affected'), equity ('proportional to income' and 'proportional to contribution to problems'), and environmental justice ('protection of nature, the environment, and future generations') are more strongly related to the fairness and acceptability of transport pricing policies than the distribution of policy outcomes that reflect self-interest (i.e. 'being financially worse off' and 'being worse off than others'). Second, we expect that the distribution of policy outcomes reflecting equality

(‘everybody is equally affected’) and environmental justice (‘protection of nature, the environment, and future generations’) are stronger predictors of the fairness and acceptability of transport pricing policies than a distribution of policy outcomes reflecting equity (‘proportional to income’ and ‘proportional to contribution to problems’). Third, we assume that fairness and acceptability of different transport pricing policies is consistently related to the same distribution of policy outcomes, irrespective of the differences in the fairness and acceptability of policy measures. To test this assumption, transport pricing policies that are assumed to differ in fairness and acceptability are evaluated.

When asking respondents directly to evaluate the relative importance of policy outcomes for the fairness and acceptability of policies, they may provide socially desirable or strategic answers (cf., Diekmann, 1997). To reduce the chance of socially desirable or strategic answers, we asked respondents to what extent different policies result in different policy outcomes, without explicitly asking them to explicitly evaluate the desirability of different distributions of policy outcomes. Next, we analysed the relationship between the likelihood of different distributions of policy outcomes on the one hand, and fairness and acceptability of the relevant policies on the other hand (cf., Nolan, Schultz, Cialdini, Goldstein, & Griskevicius, 2008).

Method

Procedure and Sample

A questionnaire was distributed in various neighbourhoods in an average-sized city in the Netherlands. Respondents were approached at home and requested whether they owned a car. In case they did, they were asked to fill out a questionnaire. About 33% ($N = 101$) of the contacted people completed the questionnaire. Questionnaires were collected at their homes within a few days later upon appointment.

The sample was reasonably representative of the Dutch population, although respondents with a high income and education level were overrepresented. Also, respondents’ annual kilometrage was somewhat higher (17,000 km/year) than the national average (16,000 km/year). However, income, educational level, and annual kilometrage did not systematically correlate with perceived fairness, acceptability, and the evaluation of the policy outcomes. So, it is unlikely that the higher income, educational level, and annual kilometrage of respondents affected our results. Moreover, because we are interested in correlations rather than in mean scores, a sample that is not fully representative is less problematic (cf., Schultz et al., 2005).

Design

The study followed a 2×3 within-subjects design (see Table 1). The first factor reflected the aim of the policy measure. Two levels were distinguished: a policy measure aimed to reduce car use and a policy measure aimed to change car

Table 1 Design and descriptions of evaluated policy measures

	Reduce car use	Change car ownership
Push	Increase of road tax with €500 when annual kilometrage >16,000 a year	Increase of tax on purchase of new cars with €1,000 for cars using less than 13 km/1 l fuel
Pull	Decrease of road tax with €500 when annual kilometrage <10,000 a year	Decrease of tax on purchase of new cars with €1,000 for cars using more than 17 km/1 l fuel
Combination push/pull	Increase of road tax with €500 when annual kilometrage >16,000 a year; decreased of road tax with €500 when annual kilometrage <10,000 a year	Increase of tax on purchase of new cars with €1,000 for cars using less than 13 km/1 l fuel; decrease of these taxes with €1,000 for cars using more than 17 km/1 l fuel

ownership. The policy measures that aimed to reduce car use implied that road taxes depended on people's annual kilometrage. The policy measures that aimed to change car ownership implied that a tax on the purchase of new cars depended on the fuel consumption of the car.

The second factor had three levels. The policy measure could be a push or a pull measure, or a combination of both. For the policy measure aimed at reducing car use, the push measure implied that road taxes increased with €500 for car users driving more than the Dutch annual kilometrage (i.e. 16,000 km) ('car use, push'). The pull measure implied that road taxes decreased with €500 a year for car users with an annual kilometrage below 10,000 km ('car use, pull'). A combination of both descriptions was given in case push and pull measure were combined ('car use, combination'). The policy measure aimed at changing car ownership implied that prices of cars that drives 13 km or less on 1 l of fuel would increase by €1,000 ('car ownership, push'), that prices would decrease by €1,000 when a car drives 17 km or more on 1 l of fuel ('car ownership, pull'), or a combination of the two ('car ownership, combination'). The policy measures were presented in a random order to prevent order effects, so different versions of the questionnaire were distributed. All respondents evaluated all six transport pricing measures.

Measurement of Fairness, Acceptability, and Evaluation of Policy Outcomes

After the description of each policy measure, respondents indicated how fair the policy measure was to them ('How fair is this policy measure to you?'); scores could range from 1 (very unfair) to 7 (very fair). Next, respondents indicated to what extent they thought six policy outcomes were applicable to the policy measures (e.g. 'if this policy measure would be implemented, my financial situation will get worse'); scores could range from 1 (strongly disagree) to 7 (strongly agree) (see Table 2). Finally, respondents indicated how acceptable the policies were to them ('How acceptable is this policy measure to you?'); scores could range from 1 (very unacceptable) to 7 (very acceptable).

Table 2 Different distributions of policy outcomes

Distribution of policy outcomes	Item in questionnaire
1. Being financially worse off	If this policy is implemented, my financial situation will get worse
2. Being worse off than others	If this policy is implemented, I will be worse off compared to others
3. Everybody is equally affected	If this policy is implemented, everybody will be affected to the same extent
4. Proportional to income	If this policy is implemented, people with low incomes will be affected less than people with high incomes
5. Proportional to contribution to problems	If this policy is implemented, people who cause problems (e.g. congestion, pollution) will be affected most strongly
6. Protection of nature, the environment and future generations	If this policy is implemented, nature, the environment and future generations will be protected

Results

Differences in Fairness and Acceptability of the Six Policy Measures

On average, all policy measures were considered to be relatively fair and acceptable (see Table 3). However, as expected, the fairness and acceptability of the six policy measures differed across the six policies (see, Tables 3, 4). Following a 2 (car use, car impact) by 3 (push, pull, combination) design, ANOVA's repeated measures revealed two main effects, and no significant interaction effects. The first main effect, as expected, implied that respondents evaluated policy measures aimed at changing car use as less fair and less acceptable than policy measures aimed at changing car ownership. The second main effect indicated that fairness and acceptability judgements differed for the push, pull, and combination policies. Push measures were considered to be less fair and acceptable than pull measures (mean difference on fairness: $-.33$, $p < .05$; mean difference on acceptability: $-.27$,

Table 3 Means and standard deviations of fairness and acceptability, and correlation coefficients between fairness and acceptability of six transport pricing policy measures

Policy measure	Fairness ^a		Acceptability ^a		<i>r</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Car use, push	3.9	1.72	4.0	1.70	.76**
Car use, pull	4.5	1.64	4.3	1.70	.79**
Car use combination	4.3	1.53	4.3	1.48	.83**
Car ownership, push	4.8	1.56	4.7	1.60	.82**
Car ownership, pull	4.9	1.37	4.9	1.47	.83**
Car ownership, combination	5.1	1.46	5.0	1.53	.91**

^a Scores could range from 1 (very unfair, very unacceptable) to 7 (very fair, very acceptable)

** $p < .001$

Table 4 ANOVA repeated measures of a 2 (car use; car ownership) by 3 (push; pull; combination) within-subjects design on fairness and acceptability of six policy measures

	<i>F</i>	df1, df2	<i>p</i>
Dependent variable: fairness			
Factor A (car use versus car ownership)	19.58	1, 100	.000
Factor B (push, pull versus combination)	6.11	2, 99	.003
Interaction (Factor A × Factor B)	2.88	2, 99	ns
Dependent variable: acceptability			
Factor A (car use versus car ownership)	19.86	1, 100	.001
Factor B (push, pull versus combination)	7.42	2, 99	.000
Interaction (Factor A × Factor B)	1.27	2, 99	ns

Note: for means and standard deviations, see Table 3

$p < .05$) and combination measures (mean difference on fairness: $-.26$, $p < .05$; mean difference on acceptability: $-.31$, $p < .001$). We found no significant difference between the fairness and acceptability of the pull and combination measures.

Relationship Between Fairness and Acceptability

Table 3 shows that for all six policy measures, perceived fairness was strongly and positively correlated with the acceptability of transport pricing policies: the more fair a policy measure was considered to be, the more acceptable that policy measures was. Across the six policy measures correlation coefficients between fairness and acceptability varied from .76 to .91.

Relationship Between Fairness and Acceptability Judgements and Evaluations of Policy Outcomes

Multiple regression analyses were conducted to analyse the relationships between respondents' evaluation of the extent to which the six policy outcomes¹ applied to policy measures and the fairness and acceptability of the policy. This was done for each policy measure separately. The six policy outcomes explained between 34% and 46% variance in the fairness of the six transport pricing policies (see Table 5). The policy outcome reflecting environmental justice ('protection of nature, the environment and future generations) significantly contributed to the explanation of the fairness of all six policy measures. The beta-coefficients indicate strong and positive relationships, implying that all six policy measures were considered to be more fair when people expected nature, the environment and future generation to be

¹ Overall, the six policy outcomes did not strongly or systematically correlate. However, strong correlations (between .35 and .71; $p < .001$) were found between the evaluation of 'protection of nature, environment and future generations' and 'proportional to contribution to problems' for all six pricing measures. Furthermore, strong correlations (between .51 and .81, $p < .001$) were also found between the evaluation of the policy outcomes 'being worse off than others' and 'being financially worse off' for all six measures.

Table 5 Regression of the fairness of the six policy measures on distributions of policy outcomes

	Car use			Car ownership		
	Push β	Pull β	Comb β	Push β	Pull β	Comb β
1. Being financially worse off	.10	.01	-.29*	-.11	-.35*	.01
2. Being worse off than others	-.43**	-.26*	-.01	-.08	.07	-.27*
3. Everybody is equally affected	.18*	.09	.23*	.37**	.37**	.36**
4. Proportional to income	-.13	-.25*	-.06	.14	.20*	.04
5. Proportional to contribution to problems	.23*	.14	.22*	-.11	.09	.05
6. Protection of nature, environment and future generations	.31**	.39**	.30*	.52**	.39**	.49**
Explained variance (%)	43**	34**	35**	46**	37**	45**

* $p \leq .05$, ** $p \leq .001$

protected. The policy outcome reflecting equality ('everybody is equally affected') contributed significantly to the explanation of the fairness of five out of six policy measures as well. All policy measures were considered to be more fair if the policy measure affected everybody equally; this relationship, however, was weak and not significant for the policy measure 'car use, pull'. The policy outcome 'being worse off than others' significantly contributed to the explanation of the variance in the fairness of four policy measures. These policies were considered to be less fair when respondents expected to be worse off than others after their implementation. For two policy measures (viz., 'car use, combination' and 'car ownership, pull'), the policy outcome 'being financially worse off' was significantly related to the fairness judgements: respondents judged these policy measures as less fair when they expected their financial situation to deteriorate. In case of two policy measures ('car use, push'; 'car use, combination'), the evaluation of the policy outcome 'proportional to contribution to problems' significantly added to the explanation of the variance in perceived fairness of these policies. Respondents considered these policy measures to be more fair when they more strongly believed that the policy measures particularly affected people who contributed strongly to the problems. Finally, the policy outcome 'proportional to income' significantly contributed to the explanation of the fairness of the policy measures 'car use, pull' and 'car ownership, pull'. The perceived fairness of the policy measure 'car use, pull' was lower when respondents expected low income groups to be less strongly affected than high income groups. For the policy measures 'car ownership, pull' the direction of this relationship was the other way around: this policy was evaluated as more fair when respondents expected low-income groups to be less strongly affected than high-income groups.

The six policy outcomes explained between 40% and 56% variance in the perceived acceptability of the policy measures (see Table 6). As for fairness, the policy outcome reflecting environmental justice ('protecting nature, the environment,

Table 6 Regression of the acceptability of the six policy measures on distributions of policy outcomes

	Car use			Car ownership		
	Push β	Pull β	Comb β	Push β	Pull β	Comb β
1. Being financial worse off	.09	-.06	-.11	-.03	-.35*	.02
2. Being worse off than others	-.35**	-.23*	-.23*	-.16	-.02	-.24*
3. Everybody is equally affected	.20*	.19*	.30**	.33**	.36**	.35**
4. Proportional to income	-.02	-.18	.06	.02	.26*	.03
5. Proportional to contribution to problems	.26*	.18	.21*	.08	.08	.10
6. Protection of nature, environment and future generations	.44**	.38**	.40**	.50**	.46**	.45**
Explained variance (%)	56**	40**	47**	47**	44**	44**

* $p \leq .05$, ** $p \leq .001$

and future generations') significantly contributed to the explanation of the variance in the acceptability of all six policy measures: if respondents expected nature, the environment and future generations to be protected, they evaluated all six policy measures as more acceptable. Also, the policy outcome reflecting equality ('everybody is equally affected') significantly contributed to the explanation of the variance in acceptability judgements: all six policy measures were more acceptable if respondents expected that everybody would be equally affected by the policy measures. The acceptability of four policy measures was significantly lower when respondents expected to be worse off than others (viz., 'car use, push'; 'car use, pull'; 'car use, combination'; 'car ownership, combination'). In case of two policy measures ('car use, push'; 'car use, combination'), the policy outcome 'proportional to contribution to problems' significantly added to the explanation of the variance in acceptability. Respondents considered these policy measures to be more acceptable when they more strongly believed that the policy measures affected people in proportion to their contribution to car-related problems. Finally, the policy outcomes 'being financially worse off' and 'proportional to income' contributed significantly to the explanation of the acceptability of the 'car ownership, pull' measure: this policy measure was less acceptable when respondents expected to be worse off financially and when respondents expected low-income groups to be affected less strongly than high-income groups after its implementation.

Overall, the regression analyses showed that the policy outcomes reflecting environmental justice and equality were systematically and consistently related to the fairness and acceptability of the six policy measures. For the other four policy outcomes, that is, 'being financially worse off', 'being worse off than others', 'proportional to income', and 'proportional to contribution to problems' no consistent relationships with fairness and acceptability were found across the six policy measures.

Discussion

In this paper, we studied which extent policy outcomes that reflect different fairness principles determine the fairness and acceptability of transport pricing policies. We identified six policy outcomes that are potentially relevant in this respect: (1) being financially worse off than before policy implementation, (2) being worse off than others after policy implementation, (3) everybody is equally affected, (4) policy outcomes proportional to income, (5) policy outcomes proportional to one's contribution to problems, and (6) policy outcomes protect nature, the environment and future generations. To test the robustness of our results, we examined the extent to which these six policy outcomes were related to the fairness and acceptability of six policies measures, which were expected to differ on fairness and acceptability. As expected, the fairness and acceptability of the six policy measures differed. Policies aimed at changing car use were evaluated as less fair and less acceptable than policy measures aimed at reducing the negative environmental impact per car. Also, push measures were generally considered to be less fair and acceptable than pull measures and a combination of push and pull measures.

As expected, we found positive and strong relationships between evaluations of the fairness and acceptability of policies: all six policy measures were more acceptable when respondents considered them to be more fair. This is in line with other studies and indicates that fairness is indeed an important factor for the acceptability of transport pricing policies (see also, Bamberg & Rölle, 2003; Jakobsson et al., 2000; Eriksson et al., 2006, 2008).

We assumed that the fairness and acceptability of transport pricing policies depends on judgments on the distributions of the expected costs and benefits of these policies, reflecting different fairness principles. The results showed a clear pattern: two out of six policy outcomes were systematically related to the fairness and acceptability of all six transport pricing policies, namely, policy outcomes reflecting environmental justice and equality. Overall, the policy measures were considered to be most fair and acceptable when future generations, nature and the environment were protected. With one exemption, the policy outcome based on equality ('everybody is equally affected') was also systematically related to the fairness of and acceptability of all transport pricing policies: policies were evaluated as more fair and acceptable when everybody was affected equally. For some policy measures, policy outcomes based on other fairness principles were more strongly related to the fairness and acceptability than the policy outcome reflecting equality. This indicates that the fairness and acceptability of transport pricing policies is most strongly related to environmental justice and, to a lesser extent, to equality. This is in line with our expectations and with results of previous studies (Clayton, 2000; e.g. Messick & Schell, 1992). Distributions of policy outcomes on the basis of environmental justice are probably preferred because these benefit the collective as well as individuals (see also, Messick & McClintock, 1968; Schwartz, 1977; Wade-Benzoni & Tost, 2009). Environmental justice is aimed at reducing environmental problems to benefit the collective. Hence, our results suggest that reducing collective problems related to car use is considered to be very important for

increasing the fairness and acceptability of policies, which is in line with previous studies (Schuitema et al., 2010).

Two policy outcomes that typically reflect egoistic concerns (i.e. being financially worse off, being worse off than others) were related to the fairness and acceptability of some policy measures only. Hence, fairness principles reflecting egoistic concerns seem to be related to the fairness and acceptability of a few policy measures only, but not to all transport pricing policies. Collective considerations (as reflected in environmental justice and equality) appeared to be more important for the fairness and acceptability of transport pricing policies.

Two policy outcomes reflecting equity, that is, proportional to income and proportional to contribution to problems, were also related to the fairness and acceptability of a few policy measures only. In our sample, people with high incomes and high annual kilometrage were somewhat overrepresented, which indicates that in general respondents would probably be more negatively affected when the highest income groups and those who cause problems would be most strongly affected. If respondents would be particularly concerned with positive outcomes for themselves they would probably not favour both policy outcomes reflecting equity. However, our results show the opposite: in case the fairness and acceptability of policy measures were related to policy outcomes reflecting equity, policies were evaluated as more fair and acceptable when people expected low income groups to be less strongly affected than high-income groups and when those who cause problems would be most strongly affected. This supports our previous conclusion that egoistic concerns are not strongly and systematically related to fairness and acceptability of transport pricing policies.

Overall, in line with our expectations, policies were systematically evaluated as more fair and acceptable when policy outcomes reflect environmental justice and equality, irrespective of the differences in fairness and acceptability for the six policy measures. So, our study suggests that despite differences in costs and benefits of different policies, fairness and acceptability depend most strongly and consistently on the extent to which policy outcomes reflects environmental justice, and, to a lesser extent, equality. The fairness and acceptability of some policy measures were related to the being financially worse off, being worse off than others, proportional to income and proportional to contribution to problems, but no systematic pattern of results was found for all six policy measures. We did not detect any logic in the conditions under which the other four policy outcomes did or did not predict fairness and acceptability of the transport pricing policies included in this study. Future research is needed to study under which conditions these policy outcomes are likely to play a key role for the fairness and acceptability of policy measures.

Environmental justice was most strongly related to the fairness and acceptability of all the six policy measures. This may be explained by the specific policy measures that were evaluated in this study: all six policy measures were aimed at improving environmental quality. Future studies should test whether our results can be generalised to other environmental policies: protecting nature, environment, and future generations may well be important for the fairness and acceptability of any policy that aims to improve the environmental quality (see also, Clayton, 2000).

Our results can probably not be generalised to policies in general, in particular when the relevant policies are not directly aimed at improving environmental quality. Some policies, including transport pricing policies, are not aimed at reducing the environmental impact of transport in particular, but are for example aimed at improving accessibility. When the main objective of a policy measure is not aimed at improving environmental quality, environmental justice is probably less predictive of fairness and acceptability. Future studies are needed to test this assumption.

Generally, people with a high income, educational level, and annual kilometrage were slightly overrepresented in our sample. However, we think it is unlikely that the overrepresentation of people with high incomes, educational levels, and annual kilometrage affected our results, as our key variables were not related to income, educational level, and annual kilometrage (see also, Jaensirisak, Wardman, & May, 2005; Ubbels, 2006). Furthermore, our sample consisted of car users only, which means that we cannot generalise our results to the general Dutch population. From a policy maker's point of view, it is relevant to understand which policy outcomes and fairness principles underlie fairness and acceptability judgements of car users in particular, because especially car users generally oppose to the implementation of transport pricing policies (Jaensirisak et al., 2005). If the aim is to increase fairness and acceptability for transport pricing policies, our results indicate that policy makers should aim to design policies in such a way that equality and environmental justice are met. An example of a policy that meets environmental justice is increasing taxes on cars with high emissions levels. Another option is allocating the revenues of pricing policies in such a way that outcomes are distributed equally or that nature, the environment and future generations are protected via the allocation of revenues. For example, nature, the environment and future generations can be protected when the revenues of transport pricing policies are invested in the development of more energy-efficient cars or to improve public transport. Our results also suggest that policies may be evaluated as more fair and acceptable when policies are framed as being consistent with environmental justice or equality. So rather than actually aligning policies with preferences for distributions of policy outcomes, it may be sufficient to frame policies in such a way that their outcomes align with environmental justice and equality. Future research should reveal whether policies are indeed believed to be more fair and acceptable when policy outcomes are framed as consistent with environmental justice and/or equality.

Another practical implication of our study concerns the communication about the intended or expected effects of transport pricing policies. Communication about transport pricing policies often focuses on reducing congestion or improving accessibility (e.g. Dutch Ministry of Transport, 2007). Our results indicate that communication on positive effects on environmental quality may well increase the fairness and acceptability of transport pricing policies.

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