The Impact of Commuting Policies on General Driving Behaviour:

The Effects on the Evaluation of Instrumental Attributes and the Spillover Effect

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Abstract

This study examines the impact of commuting policies on the evaluation of instrumental attributes of not using a car for commuting and on the general use of a car. Contrary to expectations, individuals affected by such policies did not exhibit a different general intention to avoid car usage in the future compared to those who were not affected. Additionally, there was no significant difference in their evaluation of instrumental attributes of not using a car for commuting. However, the study reveals that a positive evaluation of the instrumental attributes of not using a car for commuting is linked to a stronger intention to avoid car usage in general. This suggests that a positive experience using alternative modes of transportation during commuting can influence individuals' decisions to refrain from using cars in other contexts. Conversely, negative experiences may have the opposite effect. To gain a more understanding of the spillover effect of commuting policies, future research should investigate additional variables such as self-identity, attitudes, and self-perception. Nonetheless, this research provides valuable insights into the relationship between commuting policies, the evaluation of instrumental attributes, and the intention to avoid car usage. By shedding light on these dynamics, it contributes to the growing body of knowledge regarding sustainable transportation, which should guide policymakers and urban planners in designing strategies that promote environmentally friendly commuting practices while considering the influences on individuals' transportation decisions.

Keywords: commuting policies, car use, instrumental attributes, prescriptive norms, spillover effect.

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In recent years, the urgency of addressing global warming has become increasingly evident, with its impacts being observed worldwide, ranging from extreme weather events to the loss of biodiversity (UN Press, 2023). The significantly high CO_2 emissions generated by vehicles in transportation are a major contributing factor to this phenomenon (Global Conference on Global Warming, 2015). The use of cars for private transportation, in particular, is estimated to account for 25% of emissions resulting from the 17 most common household activities in the USA (Dietz, 2009). To address this challenge and promote more sustainable transport habits like biking, walking, or using public transportation, commuting policies have emerged as effective strategies. They are often implemented by institutional bodies and have the authority to enforce compliance across industries, sectors, and individuals. This allows for a more systematic approach to creating change, rather than relying solely on voluntary efforts (Chater, 2020).

Commuting policies frequently draw upon prescriptive norms, which are social expectations that guide specific behaviours within particular contexts and are internalised by individuals as moral obligations (Cialdini, 1993; Chater, 2020). An example of such a policy is observed at the University of Groningen, where the progressive limitation of parking facilities for staff members signals a preference for alternative means of transportation (University of Groningen, 2023). By explicitly stating that parking in the university areas is restricted in numerous instances, the policy acts as a prescriptive norm and directly affects the employees' possibility of using a car to go to work. It serves as a practical illustration of how prescriptive norms can be used to direct commuting practices and contribute to reducing the environmental impact of transportation.

The implementation of a commuting policy that restricts car usage clearly causes a reduction in driving to work. After all, if someone is restricted by a policy from using their car, they have to find other solutions to commute. However, it raises other questions: how does it spill over to the general use of cars? The concept of the spillover effect in environmental behaviour suggests that engaging in one pro-environmental behaviour can influence the adoption of other pro-environmental behaviours, either positively or negatively (Nilsson et al., 2017; Geiger et al., 2021). Research has demonstrated various instances of the spillover effect. For example, studies have shown that individuals who engage in eco-labelled shopping are more likely to consistently turn off lights when leaving a room, indicating a positive spillover effect (Lanzini & Thøgersen, 2014). Conversely, the spillover effect can also hinder sustainable behaviour. For instance, research has found that customers who purchase organic food tend to recycle less than the average population (Puntiroli et al., 2022). A comprehensive meta-analysis of 38 studies and 29 articles has further confirmed the influential role of normative goals in generating a positive environmental spillover effect (Geiger et al., 2021). Can a commuting policy, being a prescriptive norm, have a broader effect and make people choose more sustainable means of transportation in general? To try to answer these questions, this study investigates the spillover effect of commuting policies on general driving behaviour and explores the potential mechanisms that contribute to this phenomenon.

The Adoption of Sustainable Behaviour

The decision to adopt sustainable behaviour is a complex process influenced by various factors. As a basic framework to understand it, Noppers and colleagues (2014) proposed a "model of the impact of evaluations of instrumental, symbolic, and environmental attributes on adoption of sustainable innovations" (ISE-model). This model suggests that people's positive

perception of the attributes of a sustainable innovation guides its adoption. These attributes can be categorised into environmental, symbolic, and instrumental. Environmental attributes refer to positive environmental impacts of the innovation, such as reduced emissions or resource conservation. Symbolic attributes mean how the innovation is related to the individual's beliefs, values, and self-image. For example, when someone decides to bike instead of driving, they may feel this choice is part of how they communicate to people who they really are. And, finally, instrumental attributes refer to practical benefits, which usually arise from the interaction with the innovation. For example, when someone decides not to use a car to go to work, this choice takes into account instrumental attributes like its cost-effectiveness, comfort, and convenience of using another form of transport. Noppers and colleagues' research (2014) shows that, when participants were directly asked about which of the attributes guide their adoption of sustainable behaviour, they often cite a combination of instrumental and environmental reasons. However, when participants are asked to first evaluate the three types of attributes, and then answer about their intention to adopt a sustainable innovation, symbolic and environmental attributes are better predictors of people's adoption behaviour. Thus, the ISE-model suggests that interventions targeting personal meaning, as well as its impact on the environment, may be more effective in encouraging sustainable behavioural change than focusing only on instrumental attributes. This goes against the traditional economical understanding of behaviour in relation to practical utility (Elster, 1986), and reinforces that decision-making is related to subjective perceptions about the attributes of the decision (Constantino et al., 2022).

  While the original ISE-model provides a reasonable framework for understanding how individuals perceive and evaluate the attributes of their choices, it does not consider the broader impact of social influence mechanisms, which often play a crucial role in decision-making

(Cialdini, 1993). For instance, adoption norms define the social norms and expectations that shape individuals' perception of the acceptability and desirability of adopting a new behaviour within their social context (Noppers et al., 2019). So, the ISE-model was expanded to also consider adoption norms. By asking participants to estimate the percentage of significant others that would adopt a sustainable innovation in the future, researchers operationalized the perceived adoption norms into the framework and found that they encourage adoption behaviour directly. Also, the adoption norms affected the evaluation of instrumental, symbolic and environmental attributes of the innovation, which in turn increased the adoption behaviour through an indirect route (Noppers et al., 2019). So, integrating adoption norms into the ISE-model brings it closer to other research that highlights the significant role of various forms of social influence in driving environmental change (Constantino et al., 2022).

Adapting the ISE-model to Study Potential Spillover Effects of Commuting Policies

The ISE-model has been used to investigate the influence of attribute evaluation on the acquisition of sustainable goods and services, such as electric cars and green energy suppliers (Noppers et al., 2014, 2019). However, in the present study, we aim to apply the ISE-model to a situation in which the adoption behaviour extends beyond the acquisition of a sustainable product or service. Specifically, we investigate the choice to not use a car in favour of alternative means of transportation. Even though this choice does not involve a specific good or service, it is still a cognitive decision-making process and, hence, involves evaluating the attributes associated with it (Reisberg, 2022). Therefore, the ISE-model remains a useful model as a starting point for investigating the mechanisms that lead to the option of not using a car and, thus, this study will adopt a conceptual replication of this framework. Specifically, the evaluation of instrumental attributes will be closely examined, since they encompass the immediate characteristics of not

using a car, such as comfort, reliability, and safety. These attributes are more directly observed than the environmental and symbolic attributes, which rely on a personal sense of identity and perception of environmental risks (Steg & de Groot, 2019).

A first conceptual difference in relation to the ISE-model lies in the inclusion of prescriptive norms, represented by commuting policies, in place of adoption norms. Although exhibiting distinct characteristics, they are both social norms that indicate collectively accepted behaviour. While adoption norms reflect perceptions of others' intentions to adopt innovations (Noppers et al., 2019), prescriptive norms are social expectations that indicate specific behaviours that individuals should follow in a given context, enforced through rewards or punishments (Cialdini, 1993; Chater, 2020). A commuting policy that restricts car use is an example of a prescriptive norm compelling the use of other means of transportation instead of driving, at least to go to work. As a consequence, similar to adoption norms on the ISE-model, prescriptive norms are expected to have an effect on the evaluation of the instrumental attributes of not using a car to go to work. After all, the frequent adoption of this habit for commuting purposes can make it seem more automatic and commonplace, resulting in more positive perceptions of its instrumental attributes, such as convenience and comfort (Verplanken et al., 2020; Eriksson et al., 2008). Also, cognitive mechanisms, such as cognitive dissonance, seem to facilitate a positive change in the perception of the attributes of a habit. For example, by being forced to stop driving to go to work, individuals may experience cognitive dissonance, as their previous behaviour of car commuting conflicts with the new policy. This could prompt them to reassess their attitudes and beliefs about not using a car, potentially leading to a more positive change in the perception of the instrumental attributes associated with alternative modes of transportation (Elhoushy & Jang, 2023). Hence, prescriptive norms may have a stronger direct

positive effect on the evaluation of instrumental attributes than the adoption norms mentioned in the ISE-model.

The second conceptual difference involves the integration of the spillover effect. Building on the previous discussion, this study assumes that the implementation of a commuting policy enhances the evaluation of instrumental attributes associated with using alternative transportation to go to work. Concurrently, these attributes can be naturally used to assess mobility alternatives in other contexts beyond commuting. So, while the ISE-model focuses on predicting adoption behaviour based on attributes specific to that behaviour, here a change in commuting due to a policy could spill over to a general change in transport intention, which is aligned with previous studies showing a strong association between normative goals and the spillover effect in the environmental domain (Geiger et al., 2021).

This Study

In summary, the goal of this study is to investigate the following research question:

"Does a commuting policy that restricts the use of cars affect the evaluation of the instrumental attributes associated with not using a car for commuting, as well as the decision not to use a car in general?"

Accordingly, the framework used to study this research question is presented in Figure 1.

Figure 1

The Framework Used in This Study
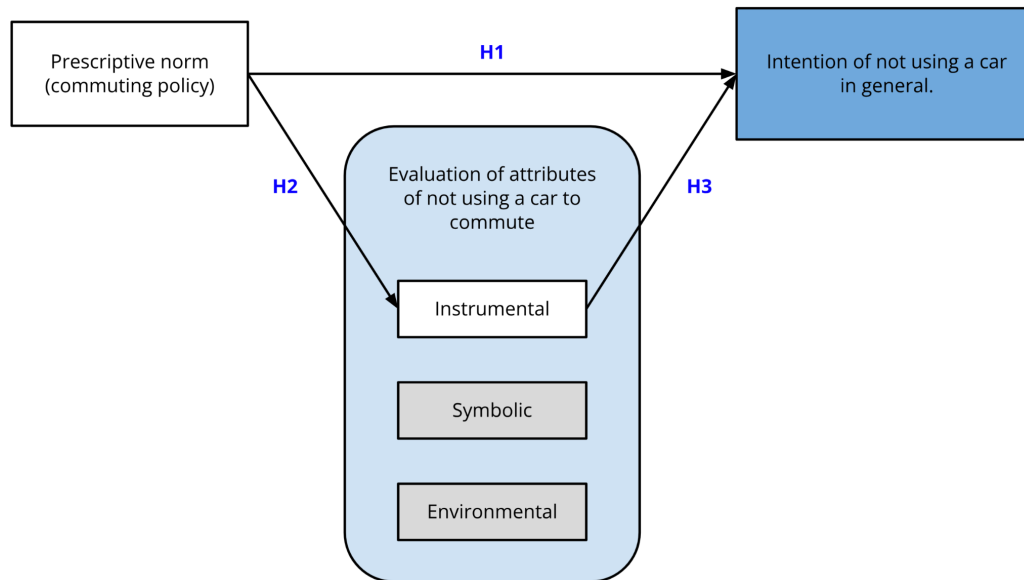
Note: The evaluation of symbolic and environmental attributes will not be examined in this paper.

To evaluate the research question, two groups of participants will be compared: those who are or feel that soon will be affected by a commuting policy and those who are not affected by such a policy. Specifically, the evaluation of instrumental attributes of not using a car to commute and the general intention to not use a car will be analysed. So, these are the hypotheses to be tested:

- Those affected by a commuting policy that restricts car use have higher intentions to not use a car in general in the future (Hypothesis H1).

- Those affected by a commuting policy that restricts car use have a more positive evaluation of the instrumental attributes of not using a car to go to work (hypothesis H2).

- A positive evaluation of the instrumental attributes of not using a car to go to work predicts a higher intention to not use a car in general in the future (Hypothesis H3).

Methods

Procedures and Materials

This research employed a field study approach with a snowballing method, utilising an online questionnaire hosted on the Qualtrics platform to collect data on participants' attitudes and habits related to commuting and transportation. The questionnaire was available in both English and Dutch. Data collection occurred from May 19th to May 25th, 2023. Potential participants were invited to take part in the study through various channels. They received an invitation link via WhatsApp and social media, and fliers with a QR code link were affixed to bulletin boards and distributed throughout Groningen, a medium-large city in the North of The Netherlands (See Appendix A). Participation in the study was limited to individuals aged 18 and above, residing in the Netherlands, and having access to a car[1]. Prospective participants were provided with a general overview of the study's purpose: to explore individuals' perspectives on their commuting behaviours. Additionally, they were informed that, for each person who completed the study, a donation of EUR 1 would be made to the Voedselbank Groningen, with a limit of EUR 150. Before proceeding with the online questionnaire, participants were asked to provide their consent for the use of their responses. The questionnaire initially focused on transport habits, including the frequency and distance of car usage. Participants were then presented with information about mobility policies that restrict car use to go to work, such as parking limitations, and were asked if they are affected by one of such policies (See in Appendix B the complete information given to the participants about commuting policies). Opinions on the acceptability of such policies were also assessed. Additionally, participants were asked about their intention to not use a car in the

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[1] The participation conditions were informed in all invitations, including fliers, banners, and posts on social media, which only occurred in the Netherlands (See Appendix A). A specific question in the questionnaire checked if they had access to a car, of their own or shared. The decision to only include participants with car access was made because the study specifically examines the decision to not use a car, even though a car is available.

future to go to work, and in general. The questionnaire further explored participants' perceptions of gains and losses associated with not using a car and how they evaluate instrumental, symbolic, and environmental attributes of not using a car to go to work. Finally, perceived behavioural control over not using a car, environmental self-identity, political orientation, and personal demographic information, such as age, gender, education, and income, were collected.

Participants

The data collection resulted in a convenience sample of 207 participants accessing the questionnaire. Of these, 15 (7.2%) accessed it via the QR code and 192 (92.3%) through the link. Seventy-seven participants (37%) did not meet the criteria and were excluded[2], resulting in a final sample of 130 participants. One hundred and twenty-two participants (93.8%) answered the questionnaire in Dutch and 8 (6.2%) in English. The sample[3] comprised 83 (63.8%) females, 44 (33.8%) males, and 1 (0.8%) with unspecified gender. In terms of age, 32 participants (25%) were in the 46 to 55 years range, while 57 (52.3%) were 45 or younger, and 29 (22.7%) were 56 or older. Regarding education, 109 participants (85.2%) held at least an applied bachelor's degree (HBO), which exceeds the 30% average of the Dutch population at the same education level (CBS, 2018). Additionally, income distribution differed from that of the Dutch population, with only 48 participants (27.7%) reporting an income lower than EUR 3,000, while this group represents at least 60% in the Netherlands (CBS, 2023).

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[2] From the 207 participants that accessed the questionnaire, 48 (23%) did not answer the questionnaire sufficiently, 6 (3%) did not give consent to participate in the study, 19 (9%) indicated not having access to a car, and 4 (2%) did not inform if they were affected by a commuting policy, which is essential information for this study.

[3] Two participants (1.5%) did not answer questions about demographics: gender, age, income, and education.

Measures

Most of the questions asked in the questionnaire are not discussed in this paper, as they only pertain to research questions from other studies that utilised the same sample and materials.

Prescriptive Norms

Specifically for this study, the presence of prescriptive norms was assessed by directly asking participants whether they were currently affected or anticipated being affected by any commuting policy that imposes restrictions on using a car to go to work (See Appendix B). The responses to this question allowed for the classification of participants into two independent comparison groups: one group ($n = 63$) comprising individuals who are currently impacted by a commuting policy or anticipate being affected in the near future (high prescriptive norms), and another group ($n = 67$) consisting of participants who do not anticipate being affected by such policies in the near future (low prescriptive norms).

General Intention of Not Using a Car

Since this study focuses on the specific intention of not driving in general, participants were asked to express their opinion regarding the single statement: "I intend NOT to use a car in the future in general, including going to work, going shopping, running errands, or other activities." Responses were provided on a 5-point scale, ranging from "strongly disagree" to "strongly agree" ($M = 2.64$, $SD = 1.24$)[4].

Evaluation of Instrumental Attributes

The participants were asked to evaluate a series of statements assessing the attributes of not using a car for commuting[5]. These attributes were selected and adapted from prior research (Noppers et al., 2014; 2019) and participants rated each statement on a 5-point scale, ranging

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[4] One participant (0.8%) did not respond to this question, and their missing answer was replaced with the series mean, with no significant detriment to the statistical analyses (Schafer & Olsen, 1998).
    [5] Only instrumental attributes will be examined in this paper.

from "strongly disagree" to "strongly agree" (see all sentences in Appendix C). The scale of

instrumental attributes contained three items with good internal reliability ($\alpha = .755$), and thus

the answers were averaged into a single scale ($M = 2.97$, $SD = 1.00$, $Mdn = 3.00$)[6].

Table 1 presents a summary of the variables for each of the independent groups (high and

low prescriptive norms).

Table 1

Evaluation of Instrumental Attributes and General Intention to Not Using a Car Depending on

Prescriptive Norms

Variable	Low prescriptive norms	High prescriptive norms	All participants
	M (*SD*) [a]	*M* (*SD*) [a]	*M* (*SD*) [a]
Evaluation of instrumental attributes	3.02 (1.09)	2.93 (0.90)	2.97 (1.00)
General intention to not use a car	2.67 (1.28)	2.60 (1.21)	2.64 (1.24)

Note: N = 130 (*n* = 67 for low prescriptive norms and *n* = 63 for high prescriptive norms).

[a] On a five-point scale from "strongly disagree" to "strongly agree".

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[6] Three participants (2.3%) reported that they were unsure about evaluating the second instrumental attribute, and an additional three participants (2.3%) expressed uncertainty about evaluating the third instrumental attribute. These responses were excluded from the calculation of the mean evaluation of instrumental attributes.

Results

The Direct Effect of a Commuting Policy on General Intention to Not Using a Car

To examine the impact of a commuting policy that restricts car use for work on the general intention of not using a car in the future, we compared the responses about the general intention to not use a car between the two groups. For the comparison of means, assumptions for a two-sample t-test were checked. The Shapiro-Wilk test was conducted to assess normality and no violations were found in either the low prescriptive norms group ($W = 0.889$, $p < .05$, $n = 67$) or the high prescriptive norms group ($W = 0.884$, $p < .05$, $n = 63$). However, the assumption of equal variances was violated, as indicated by Levene's test, $F(1, 128) = 0.351$, $p > .05$. Therefore, a Welch's t-test was employed to compare the groups, revealing no significant differences between them, $t(127.997) = 0.290$, $p > .05$. Thus, the findings do not provide support for the hypothesis that being affected by a commuting policy increases the likelihood of individuals deciding not to use a car in general in the future.

The Effect of a Commuting Policy on the Evaluation of Instrumental Attributes

To examine the impact of a commuting policy on individuals' evaluation of instrumental attributes of not using a car to go to work, we again compared the groups. Normality assumptions were assessed using the Shapiro-Wilk test, revealing violations in the high prescriptive norms group ($W = 0.971$, $p > .05$, $n = 63$). Consequently, a Mann-Whitney U test was employed, indicating no significant difference, $z = -0.478$, $p > .05$. Thus, contrary to our hypothesis, there was no support for the notion that being impacted by a commuting policy would lead to a more positive evaluation of the instrumental attributes associated with not using a car for commuting.

The Association Between Instrumental Attributes and General Intention to Not Use a Car

Next, a linear regression analysis was conducted to examine the relationship between the evaluation of the instrumental attributes of not using a car for commuting and the general intention of not using a car in the future. The assumptions of linearity, independence, homoscedasticity, and normality of the residuals were successfully checked, allowing a regression of the general intention to not use a car on the evaluation of the instrumental attributes. Consistent with our hypothesis, the results revealed a significant positive linear relationship between the two variables, indicating that a better evaluation of the instrumental attributes of not using a car to go to work predicts a higher intention of generally not using a car in the future ($\beta = 0.562$, $t = 5.735$, $p < .05$). The regression model accounted for 20.4% of the variance in the general intention to not use a car, $R^2 = .204$, $F(1, 129) = 32.895$, $p < .05$. The effect size was between medium and large, $f^2 = 0.256$.

Discussion

The purpose of this study was to examine whether a commuting policy would spill over to general driving behaviour. It was theorized that people who face restrictions on their use of a car to go to work would also intend to use less of a car in general. In more detail, the commuting policy, acting as a prescriptive norm, would improve how people evaluate the instrumental attributes of not using a car to go to work. In turn, a higher evaluation of the instrumental attributes would be associated with a higher inclination to not use a car in the future in general. Overall, the results indicate that the presence of a commuting policy did not influence individuals' general intention to not use a car or their evaluation of instrumental attributes of not using a car to go to work. However, a positive evaluation of the instrumental attributes of not using a car to go to work was indeed associated with a higher intention to not use a car in general in the future.

Does a Commuting Policy Increase the General Intention to Not Use a Car?

The findings provide no evidence to support the notion that being affected by a commuting policy increases the preference for not using a car in general in the future. This challenges the understanding that commuting behaviour, given its habitual nature, would naturally spill over to general driving behaviour through automaticity, environmental associations, and reinforcement mechanisms (Kormos et al., 2015). As previously mentioned, despite some findings suggesting that normative goals support a positive spillover effect on environmental behaviour (Geiger et al., 2021), other mechanisms such as moral licensing and rebound effect could potentially promote a negative spillover effect (Nilsson et al., 2017). In fact, there are various other variables that can potentially nullify or even reverse the spillover effect, such as emotions, self-identity, attitudes, and self-perception, although these findings are limited

and ambiguous (Nilsson et al., 2017). Hence, the absence of a spillover effect raises questions about the general effectiveness of a commuting policy in altering overall driving behaviour, and emphasizes the importance of considering other factors that may influence transportation choices. Future studies could further investigate each of these factors, leading to a more comprehensive understanding of what creates conditions for the spillover effect and what influences its valence.

Does a Commuting Policy Improve the Evaluation of Instrumental Attributes of Not Driving to Work?

The data does not provide evidence to support the idea that individuals affected by a commuting policy develop a more positive evaluation of the instrumental attributes of not using a car for their commute. The initial assumption was that a commuting policy restricting car use would prompt people to explore and adopt alternative modes of transportation for their daily commute. These other options, then, would become more familiar, leading to a positive shift in their perception of the instrumental attributes associated with not using a car (Verplanken et al., 2020). However, this hypothesis did not receive empirical support. Nonetheless, it is important to consider the specific context in which the research was done. In the Netherlands, as of 2021, people made approximately 25.5% of their daily trips by bike and 24.3% by walking, while only 43% of their daily trips are made using a car (CBS, 2022a). Additionally, 85% of individuals express satisfaction with the duration of their travel (CBS, 2022c), which is an important instrumental attribute of transportation. So, alternative modes of transportation, besides cars, are already widely adopted and favoured by the population. For that reason, the potential impact of a commuting policy on changing the evaluation of instrumental attributes may be limited. Thus,

the policy might have a smaller influence on altering perceptions compared to contexts where car usage is more prevalent and alternative options are less established.

Does a Better Evaluation of the Instrumental Attributes of Not Using a Car to Go to Work Predict a Higher Intention to Not Use a Car in General?

The results provide supporting evidence that the evaluation of the instrumental attributes of not using a car to go to work is positively associated with the intention to generally not use a car in the future. This suggests that individuals who have positive instrumental experiences while using alternative means of transportation for their commute are more likely to express the intention of not using a car in general. Conversely, a negative evaluation of these instrumental attributes can decrease the intention to avoid car usage, potentially undermining the desired behavioural change of reducing the use of cars. This highlights the importance of considering the quality of available alternatives when implementing commuting policies to promote sustainable transportation. Future research can further investigate the impact of suboptimal alternatives on individuals' intention to not use cars, providing insights into potential unintended consequences and identifying strategies to mitigate them.

General Limitations and Future Directions

It is important to acknowledge that the sample used in this study may not fully represent the entire population of the Netherlands (and the world), therefore the findings and conclusions drawn from here should be interpreted with caution when generalizing to larger populations. The sample in this study comprised a higher proportion of females compared to the general population. Also, the levels of education and income of the sample do not match the one of the Netherlands. This imbalance may limit the generalizability of the findings, since, in the

Netherlands, the proportion of use of cars and public transportation differs by gender, income, and education (CBS, 2022b).

Besides, the use of convenience sampling in this study may introduce biases and limitations (Morling, 2021). Participants who willingly chose to participate in the study may have unique characteristics or interests related to the topic, potentially impacting the generalizability of the results. To mitigate these limitations, future research could employ random sampling techniques to ensure a more diverse and representative sample to enhance the external validity of the findings.

Another potential limitation of the study is the possible influence of demand characteristics and social desirability of the participants, which can impact their responses and behaviour during the research. Demand characteristics refer to participants' perception of the study's purpose or expectations, while social desirability reflects their tendency to provide socially acceptable responses (Morling, 2021). Participants' awareness of the study's focus on environmental aspects and the social desirability of being environmentally conscious may have influenced their responses and behaviours. This could result in participants feeling compelled to present themselves as environmentally friendly, potentially biasing their reported preferences and actions. For instance, the researchers received justification from at least two participants who intended to continue to use a car but emphasized that it was an electric car or that they lived too far from work to use other means of transport. These examples demonstrate the participants' attempt to align their answers with the socially desirable image of being environmentally conscious. To address this limitation, future studies could employ techniques to minimize demand characteristics and social desirability biases, such as using more indirect measures or deceiving participants about the real goal of the study.

It is also important to acknowledge that due to the nature of the data collection process, which involved multiple research studies, only a limited number of questions were selected to measure the evaluation of each attribute (instrumental, symbolic, and environmental) in the questionnaire. This reduced scale of evaluation may have compromised the discriminant validity between the attributes, potentially leading to an overlap in the measurement of instrumental, symbolic, and environmental characteristics of not using a car. As a result, the distinct influence of each attribute on the general intention to avoid car usage may not have been accurately captured. To address this limitation, future studies could employ more comprehensive measurement scales that allow for a more in-depth examination of participants' evaluations. By incorporating a broader range of items, researchers can enhance the validity and reliability of the measurements, providing a more nuanced understanding of participants' perspectives.

Finally, in future research, the whole ISE-model could be applied to examine not only instrumental attributes but also symbolic and environmental attributes, thus capturing a broader range of factors that influence the phenomenon under investigation. Additionally, it would be interesting to consider other variables that have the potential to modulate the valence of the spillover effect, such as emotions, self-identity, attitudes, and self-perception (Nilsson et al., 2017). By further investigating each of these factors, future studies can contribute to a more comprehensive understanding of the influences of a commuting policy, as well as its potential spillover effect.

Conclusion

In conclusion, this paper emphasizes the adverse effects of car usage, particularly its contribution to global warming. Additionally, the widespread use of cars results in significant negative impacts on the liveability of cities and urban areas, such as the prioritization of traffic

infrastructure over pedestrian spaces (Anciaes & Jones, 2020). To tackle these challenges, it is essential to employ psychological knowledge to understand the motivations behind individuals' choices to stop driving and adopt sustainable transportation alternatives. By examining the influence of commuting policies on the evaluation of instrumental attributes related to not driving, interventions can be developed to effectively promote sustainable behavioural change. The study's findings provide valuable insights into the relationship between instrumental attributes of not using a car to commute and the intention to not use a car in general, shedding light on the factors that influence individuals' transportation choices. However, it is important to acknowledge the general limitations of the study, as previously discussed. Ultimately, the application of psychological knowledge in the domain of transportation can play a crucial role in promoting sustainable practices and mitigating the negative impacts of driving. By encouraging the adoption of alternative transportation modes and fostering a shift in societal norms, we can work towards creating a more environmentally friendly future.

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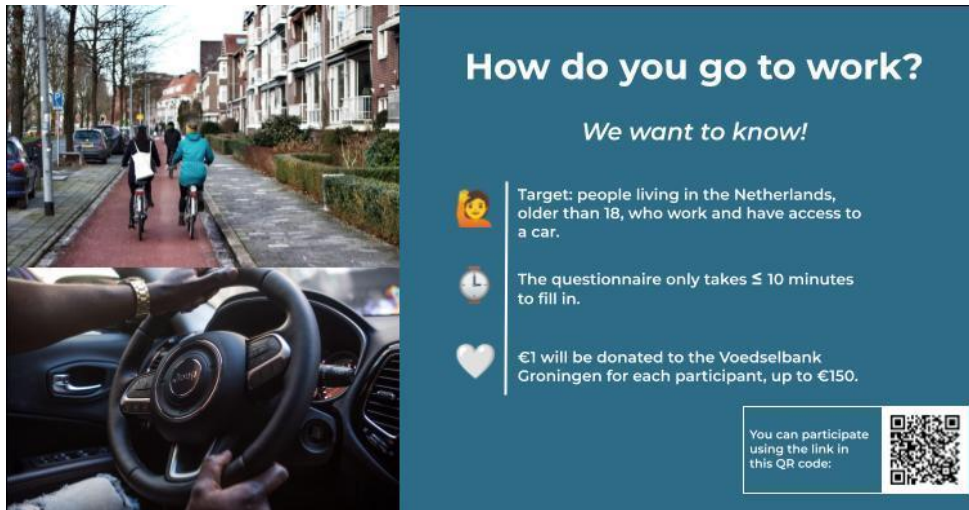
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Appendix A

Invitations to Participate in the Study

Figure A1

Printed Version, in English, of the Invitation to Take Part in the Study

Figure A2

Printed Version, in Dutch, of the Invitation to Take Part in the Study

Figure A3

Invitation Sent Through Social Media, Accompanied by a Web Link to the Questionnaire

Appendix B

Information About Commuting Policies

Figure B1

Information Shown to Participants Before Asking Them if They Are Affected in the Present, or

Think They Will be Affected in the Future, by a Commuting Policy

Mobility policies

In the last decade, more and more companies and governments have introduced mobility policies that impact people's commute to work. For example, many local governments introduce policies limiting parking space access in inner cities. These policies often include reducing the availability of parking spaces or raising parking fees in and around cities. More often than not, these policies restrict the possibility of using a car to go to work, forcing employees to rethink their commute.

Appendix C

Questions About the Evaluation of Attributes

Figure C1

Questions About the Evaluation of Attributes of Not Using a Car to Go to Work

Opinions about not using a car

We want to know your opinion about <u>NOT</u> using a car for commuting and instead choosing other means of transportation. For example, using a bike, public transport, or even walking to work.

Please, give your opinion about each sentence.

<u>NOT</u> using a car...

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	I don't have an opinion
... is comfortable.	○	○	○	○	○	○
... is safe.	○	○	○	○	○	○
... is environmentally friendly.	○	○	○	○	○	○
... emits few harmful particulates.	○	○	○	○	○	○
... fits with what I find important in life.	○	○	○	○	○	○
... shows who I am.	○	○	○	○	○	○
... emits few greenhouse gases.	○	○	○	○	○	○
... is reliable.	○	○	○	○	○	○
... fits with how I want to see myself.	○	○	○	○	○	○

Note: Instrumental attributes are underlined in blue.