

**Goal Framing, Gender Differences and Attitude Towards Cargo-Bike Sharing Within
the Groningen City Centre**

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PSB3E-BT15: Bachelor Thesis

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February 4th, 2022

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Abstract

Due to global warming and its immediate impact on the planet and its inhabitants, a shift from high-carbon mobility to more sustainable options such as cargo-bikes is needed to contribute to the reduction of CO₂ emissions and further warming of the Earth. Based on the Goal Framing Theory, I investigated how biospheric and hedonic goal frames affect attitude and the intention to use a cargo-bike sharing system in Groningen. Furthermore, I examined whether there is a difference in attitude towards cargo-bike sharing between men and women in the Biospheric-, and the Hedonic goal frame. I conducted a between-subjects experimental study ($N=83$) and found no significant effects of biospheric-, hedonic goal framing or gender on attitude. However, I found a positive correlation between attitude and intention. These results suggest that goal framing and gender might not be as influential as previously hypothesized. In order to draw more sophisticated conclusions, future studies should therefore not only replicate our study whilst accounting for our limitations but also need to examine whether other more influential factors might play a role in the attitude and intention towards cargo-bikes. Additionally, theoretical and practical implications such as the improvement of the manipulation check and the application of our results into practice will be discussed.

Keywords: cargo-bikes, attitude, biospheric goal frame, hedonic goal frame

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The IPCC (2018) report for policymakers, states that there is an acute risk of an irreversible further warming of the earth if our CO₂ emissions do not go down sooner. Therefore, cities and their inhabitants have to start engaging in more environmentally friendly behaviours. Sustainability, which is a growing concern in urban planning, plays a key role in preserving our eco-systems and natural resources. Sustainable urban planning includes aspects such as the use of renewable energies, green building designs and sustainable transport modes (Teriman et al., 2010). The latter is especially relevant as cars cause traffic jams, are powered by non-renewable fuels and pollute the air by producing emissions (Zhang & Batterman, 2013). Shifting the focus from high-carbon mobility such as private car use to more sustainable options for instance cargo-bike sharing, which are mostly electronic bikes with a cargo area located in the front or the back of the bike, is crucial in reducing (transport-related) emissions. Data from several studies suggest that cargo-bikes are advantageous to use for utilitarian and socio-spatial purposes (Johannes, 2015; Riggs, 2016), and have been shown to benefit cities by reducing car usage (Becker, 2018). According to Goodyear (2013), Groningen, a medium-sized city in the Netherlands with a population of 232,874 (*"Municipality of Groningen (Gemeente)"*, 2022), is one of the world's bike-friendliest cities and is a great example for active use of sustainable transport modes. In the Dutch city, cargo-bikes are used for different reasons ranging from parents picking up their children from school to students moving in or out of their house. As such, this study examines whether a specific framing influences people's attitudes towards cargo-bike sharing. Additionally, I will investigate whether women's and men's attitudes are affected differently depending on which framing condition they are in. I will be looking at docking stations as the municipality of

Groningen is specifically planning on implementing a way to introduce cargo-bikes while simultaneously using the space in the city wisely.

The Goal Framing Theory

In order to understand the matter more thoroughly, we will make use of the Goal Framing Theory which helps to explain people's behaviour based on how their goals influence the way they process information and act upon it. It has been theorized that the value that is most prevalent in a situation, will have the strongest effect on cognitive processes, such as decision making (Lindenberg & Steg, 2007). For instance, a person walking outside and smoking a cigarette might wait for a bin once they are finished or they might throw the cigarette on the ground. The goal "frame" in this situation is how the person will process the information about where they should throw the cigarette away and whether or not they will act on their thoughts. The Goal Framing Theory consists of three goals namely Hedonic, Gain and Normative Goals. The *hedonic* goal is to 'feel better right now', the *gain* goal 'to guard and improve one's resources' and the *normative* goal 'to act appropriately'. To go back to my previous example; in a biospheric value framing, throwing the cigarette in a bin instead of on the floor would be 'acting appropriately' with regards to the environment and something you ought to do and therefore a normative goal. In the same context, simply wanting to discard the cigarette, no matter where could be considered a hedonic goal.

In the past, the Goal Framing Theory has repeatedly been shown to be suitable as a theoretical framework in order to understand pro-environmental behaviour (Lindenberg & Steg, 2007; Steg et al., 2013). However, little research has been done on how the Goal Framing Theory applies to the mobility sector. The purpose of this study is to investigate how different goal-frames influence people's attitudes towards pro-environmental behaviour or in our case how it affects their attitude towards low carbon emission mobility such as cargo-bikes. Accordingly, I seek to obtain data on Goal framing in the area of mobility which will

help to address these research gaps. The focus of this paper will be on biospheric and hedonic framing which is why the gain goal will not be explained any further.

Biospheric values, evaluating situations on whether they will affect the environment, fall under Normative goals. Reviewing multiple studies on how environmental beliefs and concerns influence behavior, Steg and Vlek (2009) found that individuals are more likely to engage in pro-environmental behaviour if they endorse prosocial, biospheric or altruistic values. Furthermore, environmental concern has been empirically shown to be related to higher likeliness of acting in a pro-environmental way. Applying these results to our research, I believe that biospheric framing will lead to more favourable attitudes towards the use of cargo-bike sharing. Accordingly, through our phrasing of the biospheric condition about how using a cargo-bike is better for the environment, the biospheric goal frame will be focal and therefore environmental concern will be higher. As a result, people are more likely to consider what consequences this has on the environment (Lindenberg & Steg, 2007). Thus, we believe, because the focus on sustainable mobility and using cargo-bikes could be considered something you ‘ought to do’ in that context, the biospheric values will dominate the framing process and will be most prevalent. Accordingly, I predict *Hypothesis 1: Biospheric goal framing will result in the highest attitude towards cargo-bike sharing compared to hedonic and no goal framing.*

Hedonic goals could be explained as evaluating situations on whether they feel good. They have also been shown to be one of the more influential frames because it needs less external input and is more focused on the self in comparison to biospheric values where social influence plays an important role (Lindenberg & Steg, 2007). Thus, in this context, we argue that hedonic framing will have a more positive impact on attitude than no goal framing. In the framed condition we promote the fun and comfortable side of cargo-bike sharing which should be more appealing and convincing to use cargo-bikes than reading a plain informative

text with no goal framing. Therefore, I predict *Hypothesis 2: Hedonic goal framing will result in a more positive attitude towards cargo-bike sharing compared to no goal framing.*

Attitude and Intention

The existing body of research on attitude, (i.e. the negative or positive feeling towards a(n) event/phenomena), established that attitude promotes intention (Farahbod, 2013; Lee, 2009). In the present study, we define intention as to how inclined the users are towards using a cargo-bike sharing system. Yu and colleagues (2018) have found the effect of attitude on intention to be significant. Their research on commercial bike-sharing systems and the development of a holistic model explaining the intention to use them has shown how intention is positively affected by attitude amongst other factors such as perceived usefulness and perceived behavioural control. Consequently, we want to replicate these findings which is why I predict *Hypothesis 3: Attitude positively correlates with the intention to use cargo-bike sharing.*

Gender Differences in Biospheric and Hedonic Framing

Several attempts have been made to find a relationship between gender and pro-environmental behaviour. Stern and colleagues (1993) have concluded that women are more likely than men to think about the biosphere and consequences for themselves and others. A study about nuclear power found that women are indeed more concerned about safety issues such as life or health-threatening events (Brody, 1984). As the consequences of Global warming such as extreme weather events like floods and droughts can also be seen as life and health-threatening, these results are transferrable to our study. Other studies found women to be more concerned about climate change than men (McCright, 2010). Furthermore, women also tend to have more altruistic traits than men which Gilligan (1982) argues is due to a stronger desire to socialize and to regard other people's wishes. This is in line with the result of a study about the emergence of ecofeminism in which they argue that instead of there being

a gender difference in values, women have a different biospheric orientation which results in them relating their environmentalism to their values (Diamond & Orenstein, 1990). Moreover, many other studies, one of them being a meta-analysis by Hines and colleagues (1987), do not report consistent findings. Overall, the present body of knowledge does not allow to draw a sophisticated conclusion about the effect of gender on attitude. Notwithstanding, I want to contribute to research and gain more clarity about the matter by examining whether women in the biospheric framing condition have an increased attitude towards cargo-bike sharing, compared to men in the same condition. Based on this I predict *Hypothesis 4: Women in the biospheric framing condition have a higher attitude towards cargo-bike-sharing than men in the biospheric framing condition.*

However, potentially there are not only differences between men and women when it comes to attitude towards cargo-bikes but also how its users are perceived. Research about mobility and gender roles has pointed out that there is a gender difference in how cargo-bike users are being perceived in society. The so-called ‘cargo-bike dads’ are being perceived more negatively as soft yet emancipated whilst the ‘cargo-bike mothers’ are being perceived as career-focused and confident (Boterman, 2020). These results indicate that there might be underlying expectations or stereotypes surrounding the users of cargo-bikes, which in return could influence people’s attitude towards the product. According to Wang (2010), hedonic values have a stronger influence on intention to purchase products in men than in women. This outcome is contrary to previous studies which have suggested that hedonic consumption profiles do not influence attitude towards technology (Rodrigues Pessoa de Amorim, 2017). As the research at hand is quite contradicting and diffuse concerning the research areas, I will examine how and if hedonic framing influences men’s attitudes towards cargo-bike sharing. Nevertheless, I expect to find a more positive effect of hedonic framing on men’s attitudes than on women’s attitudes towards sustainable mobility, which is why I predict *Hypothesis 5:*

Men in the hedonic framing condition have a higher attitude towards cargo-bike sharing than women in the hedonic framing condition.

Method

Participants

According to our power analysis, our study required a sample size of 159 participants, detecting a medium effect size, with a power of 0.8 with an alpha level of 0.05. A total of 125 participants took part in this study, of which 83 were included in the analysis¹. 51 women (62%), 31 men (37%) and one non-binary/third gender (1%) participated². Seventy-three and a half per cent of the participants were between the ages of 20 to 29 years old and 53 (63.9%) participants had at least a bachelor degree. Furthermore, 36 (43.4%) participants owned a car or had access to one. In addition, the location that was most represented in this study was Centrum, (36.1% of participants live here), and the least represented location was Ten Boer (1.2% of participants live here). With a Chi-square test, we tested if there were any significant differences between the different experimental conditions to determine their independence. The results showed that there were no significant differences in the distribution of car ownership ($\chi^2(4, N = 83) = 5.093, p = .278$), Gender identity ($\chi^2(4, N = 83) = 4.363, p = .359$), Age ($\chi^2(10, N = 83) = 13.447, p = .200$), Education ($\chi^2(10, N = 83) = 8.364, p = .593$), and Location ($\chi^2(14, N = 83) = 10.519, p = .723$) between the three experimental conditions.

Research Design and Procedure

This study was a between-subjects experimental design exploring the effects of differing goal frames on the attitude and intention to use electric cargo bike-sharing systems

¹ The participants that were excluded from the analysis either did not give consent, did not finish the survey or did not answer the attention check right.

² There was only one non-binary person, therefore I excluded them from my analysis.

in Groningen. For the online survey, we used the Version December 2021 of the Qualtrics Software Copyright © 2021 Qualtrics.

First, participants' values, place attachment and ecological worldview were measured with the corresponding scales. Thereafter, participants were randomly assigned to one of three conditions; either a biospheric condition, a hedonic condition, or a control condition (see Appendix A for a more detailed description of the three conditions). The conditions differed in the way in which cargo-bike sharing systems were framed in a short text presented to participants during the survey. Afterwards, the participants' scores on both attitude and intention were measured.

Initially, sampling was done in person by approaching potential participants in Groningen's city centre to draw a random sample from our population of interest. We approached them with a flyer (see Appendix B) to participate by scanning a QR code that led to the corresponding survey, which allowed participants to fill out the questionnaire at any given time. Participants were only considered if their age exceeded 16 years, and if they were actual residents of the city of Groningen. Before participants were referred to the survey, a short but general introduction to the study was provided. Next, we specified that participation is voluntary, anonymous and that the withdrawal from the study was possible at any moment. The survey was provided in two languages, both Dutch and English. Only participants that indicated proficient knowledge of either language were considered during the data analysis. Furthermore, we communicated the estimated time of 10 to 15 minutes it takes to fill out the survey.

During our data collection, new COVID-19 measures were introduced by the Dutch government. To oblige to these measurements, we changed our data collection method to recruiting participants online, mainly via Facebook and WhatsApp groups. The invitation included a short introductory text (Appendix C), the link to our survey and a digital version of

the flyer as an attachment. Ultimately, this resulted in a convenience sample for our study. We will discuss the implications for the data analysis of this approach in more detail in the discussion. This study, along with all the changes made in the data collection process, was approved by the Ethics Committee of the University of Groningen.

Materials

Description of Stimulus Materials

In the control condition, participants were presented with a neutral text that explained cargo-bikes and cargo-bike-sharing, describing cargo-bike sharing as a way of transporting goods such as furniture, groceries or even children. In the biospheric framing condition, participants were presented with the general text, along with a biospherically phrased text. The latter included information about the reduction of CO₂ emissions, noise pollution and environmental preservation to emphasize the ecological advantages of making use of a cargo-bike sharing system. In the hedonic framing condition, along with the general text, participants were presented with a hedonically phrased text, describing how convenient, comfortable and time-efficient a cargo-bike sharing system can be.

Description of Questionnaires

As previously mentioned, multiple scales were used for our research. Only the relevant scales for this Thesis will be explained in more detail after briefly introducing the other scales. In the first scale, participants' *values* were measured as they were able to rate the importance of each of the 16 values of the Values scale, measuring biospheric, altruistic, egoistic and hedonic values (Steg et al., 2014b). The second scale that measured *place attachment*, where participants were asked to rate their emotional sentiments towards a particular place, is a scale designed by Halpenny (2010). The third scale, *ecological worldview* was measured with the New Ecological Paradigm (NEP) scale (Anderson, 2012). All previously mentioned scales were measured before the manipulation. Participants'

perceived behaviour control was measured by a validated scale by Ajzen (2002) and was measured after the manipulation together with the following scales.

Attitude. To measure the variable *attitude* (towards cargo-bike-sharing), we used a validated scale that was designed by Fishbein and Ajzen (1975). This scale included items such as “Using a cargo-bike sharing system is a good idea” and “In my opinion, it would be desirable to use a cargo-bike sharing system”. This scale ($M=3.85$, $SD= .83$) was assessed with a five-point Likert scale ranging from 1= *strongly disagree* to 5=*strongly agree*.

Intention. *Intention* (towards cargo-bike-sharing) was measured by the validated intention scale of Fishman, Lushin and Mandell (2020). The two questions in this scale were “How likely are you to use a cargo-bike sharing system in the future?” and “How likely are you to recommend the use of cargo-bike sharing system to your friends or family?”. The *intention* scale ($M=3.41$, $SD= 1.1$) was assessed with a five-point Likert scale ranging from 1= *very unlikely* to 5=*very likely*.

Manipulation Check. Before conducting the analysis, we checked whether our Manipulation worked by conducting a Chi-square test. The results were significant ($\chi^2 (4, N = 83) = 32.30$, $p = .001$) showing that our manipulation was successful. As a manipulation check, we asked participants to identify which main benefits of cargo bike-sharing were mentioned in their survey (Table 1). We decided not to exclude those who answered the manipulation check incorrectly and merely used it to gain insight into whether our manipulation worked.

Table 1

Manipulation check

	No frame	Hedonic frame	Biospheric frame
Transporting goods	13	7	3

Fun, convenience, time- efficiency and transporting goods	7	16	2
Reducing CO2 emissions, environmental preservation and transporting goods	6	7	22
Total	26	30	27

Statistical Analysis

To process the data and to perform the statistical analyses, I used IBM SPSS Statistics, version 27.0.1.0.

To understand the relationship between goal frames and attitude specifically, we wanted to conduct a One-Way Analysis of Variance (ANOVA) with two planned contrasts. As the assumption of normality was not met, we performed a Kruskal-Wallis One-Way ANOVA instead. The Kruskal-Wallis test additionally assumes a similar distribution shape of the dependent variable for all groups. Test results showed this was the case. Therefore, we proceeded to do the Kruskal-Wallis test looking at group medians. The first contrast (H1), compared the biospheric frame to the hedonic and the control frame, while the second contrast (H2), compared the hedonic frame to the control frame only. Secondly, to test the relationship between attitude and intention (H3), a non-parametric correlation analysis was run between the two variables. Lastly, I performed a Mann-Whitney U Test for each of my individual hypotheses (H4 & H5) as the non-parametric alternative to the Independent Samples T-test. The results of my individual hypotheses should be interpreted with caution as the normality assumption was violated.

Results

The Effect of Biospheric and Hedonic Framing on Attitude

In order to examine the first hypothesis, whether biospheric goal framing will result in a higher attitude towards cargo-bike sharing compared to hedonic and no goal framing, we conducted a Kruskal-Wallis One-Way ANOVA. Surprisingly, we did not find support for the first Hypothesis as the Kruskal-Wallis found nonsignificant results ($H(2) = .088, p = .957$) meaning the biospheric goal framing did not lead to a higher attitude.

The second hypothesis was examining whether Hedonic goal framing will result in a higher attitude towards cargo-bike sharing compared to no goal framing. The non-significant results of the previously conducted Kruskal-Wallis apply to this hypothesis as well which means that Hedonic goal framing did not result in a higher attitude towards cargo-bike sharing compared to no goal framing.

In order to assess our third hypothesis, whether attitude positively correlates with the intention to use cargo-bike sharing, we conducted the non-parametric correlational analysis; spearman's rho. There was a significant correlation ($r(81) = .576, p < .001$.) Thus, attitude positively correlates with the intention to use cargo-bike sharing.

The Effect of Gender on Attitude

Moving on to my first individual hypothesis, Hypothesis four; whether women in the biospheric framing condition have a higher attitude towards cargo-bike sharing than men in the same condition, the Mann-Whitney U test indicated a non-significant difference ($U(N_{men}=7, N_{women}=20) = 45.5, p=.168$) between the attitude of women ($Mdn=4$) and the attitude of men ($Mdn=3.75$). Thus, women in the biospheric framing condition did not have significantly higher attitudes towards cargo-bike sharing than men.

Concerning my second individual hypothesis, Hypothesis five, whether men in the hedonic framing condition have a higher attitude towards cargo-bike sharing than women in the same condition I conducted another Mann-Whitney U test. There was no significant

evidence ($U(N_{\text{men}}=12, N_{\text{women}}=17) = 101.00, p=.964$) that men ($Mdn=4$) in the hedonic framing condition had significantly higher attitudes towards cargo-bike sharing than women ($Mdn=3.75$).

Discussion

The aim of this study was to find out whether a specific framing could influence participants' attitudes towards the use of a cargo-bike sharing system, by looking at biospheric framing (1), hedonic framing (2) and gender specifically. The results of our first two hypotheses, whether biospheric or hedonic framing would result in higher attitudes towards cargo-bike sharing, were not significant. Contrarily we found that there was a significant positive relationship between attitude and intention, therewith supporting our third Hypothesis (3). In the case of determining whether the attitudes of men and women would differ in the biospheric (4) and hedonic (5) framing condition, we found no significant differences in the groups. Overall, these results suggest that the influence of framing on attitude is not as strong as expected. It seems that it does not make a big difference whether there is a goal framing describing the cargo-bike sharing system or not.

The first hypothesis in this study sought to determine whether biospheric goal framing would result in the highest attitude towards cargo-bike sharing compared to hedonic and no framing. Biospheric framing did not lead to a higher attitude towards a cargo-bike sharing system compared to hedonic and no framing. This means that the participants' attitudes were not higher when they were presented with the biospheric framing. This finding is contrary to previous research which suggested that when people are made aware of environmental problems and thus their biospheric goal frame is stronger, they are more likely to act pro-environmentally with disregard towards hedonic aspects (Lindenberg & Steg, 2007).

Contrary to our second hypothesis, we did not find a significant difference between hedonic framing regarding attitude towards cargo-bike sharing. This result can be explained

by numerous reasons. However, one should be cautious to disclaim an effect based on a single study. Firstly, it could be that there is indeed no significant effect and that how we phrased our framed conditions made no difference in attitude. Secondly, there could have been an effect but due to methodological issues, we might not have been able to detect it. Thirdly, our power was too low to be able to detect a true effect. The aforementioned two reasons will be further discussed in the limitation. Another possible explanation for the non-significant result is that multiple motivations, such as personal or social norms might influence the way people act when it comes to environmental behaviour (Lindenberg & Steg, 2007) thus, a specific framing might not be the only determinant of a change in attitude.

In accordance with other research (Farahbod, 2013; Hussein & Abd Wahid, 2018; Lee, 2009; Suh, 2014), we found a positive correlation between attitude and intention. Therewith, our study provides further evidence for the assumed association between the two variables. However, future investigations could conduct a mediation analysis on the effect of framing on intention with attitude as a mediator in order to be able to draw better conclusions.

Concerning the fourth hypothesis, no evidence of a significant finding that women in the biospheric condition show higher attitudes toward a cargo-bike sharing system than men in the same condition was detected. This result may be explained by the fact that there were only 27 participants in the biospheric condition. With that sample size power decreased which reduced the chance of detecting a true effect. Alternatively, our results might suggest that there are more determinant factors of attitude than we included in our manipulation. One factor relevant to attitude formation might be the perceived costs of cargo-bike sharing. Perceived costs can be considered as a gain goal. Thus, participants in the biospheric condition potentially did not only consider environmental factors but also financial aspects. Indeed, other research has found that more than one goal can be present at a time and a focal shift from one goal to another can occur especially when information is presented

ambiguously (Lindenberg & Steg, 2007). Thus, once presented with the utilization of a cargo-bike sharing system, which evidently comes with costs, participants' focal goal could have shifted from the biospheric towards the gain aspects. If that was the case, and our framing led to different or multiple goals to be focal, new directions would have to be explored to find out whether there are gender differences within these framing effects.

For the last hypothesis, hypothesis five, whether men in the hedonic condition show higher attitudes toward a cargo-bike sharing system, no significant difference in the attitude of men and women was detected. Here, the sample size was, again, relatively low with 29 participants, which makes it difficult to generalize these findings. Additionally, this finding is not in line with other studies (Tifferet & Herstein, 2012), which have reported that women are more likely to be influenced by hedonic values than men, therefore contradicting my previously stated hypothesis.

Limitations and Future Directions

The major limitation of this study is that we had low power due to a relatively small sample size ($N=83$). This reduced our chances of discovering a true effect. Therefore, all of our results should be treated with caution. The small sample size and the fact that 62% of the participants were women could have also influenced the outcome of hypotheses four and five, as in order to measure gender, ideally, the ratio of men to women should be equal. Another limitation was how we conducted the manipulation. Our manipulation was significant however, it was phrased more similar to an attention check as we asked the participants if they were able to recall the main benefits of a cargo-bike sharing system mentioned in the text. Instead, we could have asked a question such as, 'What are, in your opinion, benefits of a cargo-bike sharing system?' in order to get more consistent results for our manipulation. Furthermore, the collection of our sample was limited, not only due to the new Covid restrictions and the subsequent convenience sample we gathered but also because we

collected most of our participants in the Groningen city centre. Large randomized controlled trials, including a variety of different locations, could provide more definitive evidence and allow wider conclusions.

There is abundant room for further progress in determining whether and how a specific framing influences attitude. A study with more focus on other, possibly influential, factors such as perceived costs is therefore suggested. Moreover, future research could explore whether having certain values antecedent to the study and being in the specific condition reinforcing their already existing values, might increase people's attitudes towards sustainable mobility. For instance, replicating our study but instead of randomly assigning the participants to the different conditions, one could measure in advance what kind of values people endorse, and accordingly place them into conditions matching their results. This could lead to crucial outcomes as one would have empirical data on the effect of pre-existing values on a framed text as well as on attitude.

Concerning gender differences (Hypotheses 4 and 5), a few directions might be interesting to investigate. Firstly, future studies could further examine the role of gentrification processes and how they affect the development of urban space, sustainable transport modes and whether there would be gender differences in attitude as mentioned in previous research (Boterman, 2020). Secondly, it would be worthwhile to further investigate how the internalization of societal views could play a role in gender as there seem to be differences in how men and women, particularly parents, are perceived due to their use of cargo-bikes (Boterman, 2020). Thirdly, the decision to exclude the non-binary person was purely due to issues of generalizability as one person is not sufficient to draw sophisticated conclusions. However, it is relevant to point out that a lot of research, nowadays still, is often not inclusive, whether it is gender, race or age. As this is a Bachelor Thesis, our time and resources were limited. Nevertheless, further research with more diverse and inclusive

populations should be undertaken to investigate whether our results are transferable and generalizable beyond our sample. Besides, approaching gender as more of a continuum shall be further explored and facilitate the inclusion of more extensive groups of people.

Theoretical and Practical implications

This study has important theoretical and practical implications. The findings that emerge from our study is that most of our results were non-significant. This might seem surprising in the face of a successful manipulation check. However, potentially the manipulation itself might have been suboptimally phrased therewith measuring attention rather than framing. Besides, our manipulation could have been stronger with an improvement of the framed text and more differing visualization for each framing as we used the same picture for all three conditions. Future studies could benefit from our results by replicating our study, whilst accounting for our limitations and conducting further exploratory analyses. Our results, not being in line or even contradicting existing research, show how the field of attitude change through framing still needs a lot of research.

The practical implications of our study are that the data we have gathered on participants' attitudes towards cargo-bikes may be useful to the Municipality of Groningen or for organizations working together with the municipality. Our data, while preliminary, gives us an insight into not only people's preferences but also their consumer behaviour, or in our case, intention. However, there is no further evidence for an effect of framing on attitude, and different factors (i.e. perceived costs or social norms) might be interfering with the way one processes information when looking at framing. Thus, companies should investigate further into the matter of whether framing can be used as an appropriate tool to measure people's attitudes.

Conclusion

Overall, this study does not support the idea that a specific framing affects participants' attitudes towards cargo-bike sharing systems more than no framing. Notwithstanding the limitations such as the sample, this study certainly adds to our understanding of the use of framing in the context of environmental psychology and its application into the field of sustainable mobility. Although the results of our study are ambiguous, they should be a motivational factor to investigate further into how the promotion of more sustainable mobility alternatives can be improved and encouraged.

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Appendix A

Control Condition

“Have you ever heard of cargo bikes (bakfietsen/Lastenräder) before? A cargo bike has an area big enough to fit and transport large goods. This cargo area, often in the form of a box or flat platform, can be located in the front or back of the bike. Cargo bikes are used for various purposes such as transporting furniture, groceries, or even children. The municipality of Groningen is considering introducing a cargo bike-sharing system for electric cargo bikes with various docking stations located at hotspots throughout the city. At said stations, electric cargo bikes will be available to the locals, while those not in use will remain there to charge.”

Biospheric Condition

“Have you ever heard of cargo bikes (bakfietsen/Lastenräder) before? A cargo bike has an area big enough to fit and transport large goods. This cargo area, often in the form of a box or flat platform, can be located in the front or back of the bike. Cargo bikes are used for various purposes such as transporting furniture, groceries, or even children. The municipality of Groningen is considering introducing a cargo bike-sharing system for electric cargo bikes with various docking stations located at hotspots throughout the city. At said stations, electric cargo bikes will be available to the locals, while those not in use will remain there to charge.

In addition, using a cargo bike is a more sustainable way of transportation: Cargo bike-sharing systems help decrease car use and traffic congestion and thereby help reduce CO₂ emissions and air-, and noise pollution. A possible decrease in car use through these sharing systems allows for more green spaces and biodiversity in the future. Thus, using such systems can actively contribute to environmental preservation and restoration.”

Hedonic Condition

“Have you ever heard of cargo bikes (bakfietsen/Lastenräder) before? A cargo bike has an area big enough to fit and transport large goods. This cargo area, often in the form of a

box or flat platform, can be located in the front or back of the bike. Cargo bikes are used for various purposes such as transporting furniture, groceries, or even children. The municipality of Groningen is considering introducing a cargo bike-sharing system for electric cargo bikes with various docking stations located at hotspots throughout the city. At said stations, electric cargo bikes will be available to the locals, while those not in use will remain there to charge.

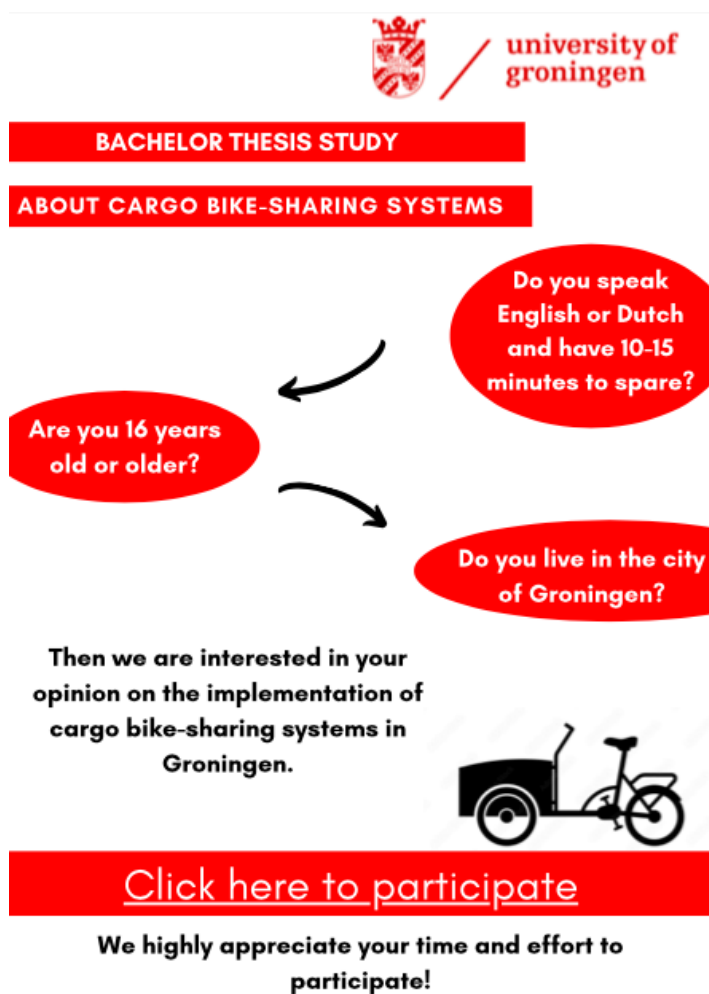
In addition, using a cargo bike can be fun: you get to spend time outside with friends and family while comfortably taking various goods along with you, such as food and drinks for a picnic. Cargo bike-sharing systems present a convenient and flexible type of transport, as you do not need to look for a parking spot for your car in the usually busy city center. Also, electronic cargo bikes allow for comfortable and time-efficient trips.”

The Picture Included in Each Condition



Appendix B

Handout for Data Collection



The handout features the University of Groningen logo at the top right. Below it are two red rectangular banners: "BACHELOR THESIS STUDY" and "ABOUT CARGO BIKE-SHARING SYSTEMS". The main content consists of three red oval callouts connected by arrows. The first oval asks "Do you speak English or Dutch and have 10-15 minutes to spare?". An arrow points from this oval to a second oval on the left asking "Are you 16 years old or older?". Another arrow points from the second oval to a third oval on the right asking "Do you live in the city of Groningen?". Below these questions, a text block states: "Then we are interested in your opinion on the implementation of cargo bike-sharing systems in Groningen." To the right of this text is a line drawing of a cargo bike. At the bottom, a red banner contains the text "Click here to participate" with a red underline. Below this banner, a final text block says: "We highly appreciate your time and effort to participate!"

university of groningen

BACHELOR THESIS STUDY


ABOUT CARGO BIKE-SHARING SYSTEMS

Do you speak English or Dutch and have 10-15 minutes to spare?

Are you 16 years old or older?

Do you live in the city of Groningen?

Then we are interested in your opinion on the implementation of cargo bike-sharing systems in Groningen.



[Click here to participate](#)

We highly appreciate your time and effort to participate!

Appendix C

Introduction Text for Online Participant Recruitment

Hello everyone!

Unfortunately, due to new measures, it's getting harder for us to collect new data. Therefore, I would really appreciate it if you could fill out our Bachelor Thesis survey. We are gathering data for our Thesis about cargo-bike (bakfiets) sharing systems. We are aiming for a representative sample of Groningen citizens. Therefore, if you have 15 minutes to spare to fill out the survey, it would help us a lot!