Agora
Verkehrswende

New Roads to Sustainable Travel

Communication Strategies for Behaviour Change

Institut für
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Preface

What a society regards as normal is strongly shaped by the messages that its media communicate. Of the many areas of life that social norms influence, the way people travel is often overlooked because it is so deeply anchored in our psyches. Nowhere is this more true than in our attitudes towards cars. For the vast majority of people in the US, in Australia, in Europe and, increasingly, Asia, cars and car ownership have become a way of life. And the auto industry has gone to dramatic lengths to ensure that they remain so. In 2017, car manufacturers spent around 1.8 billion euros on advertising in Germany alone.[1]

Our love affair with cars is one of the chief obstacles to creating an environmentally sustainable transport sector. If we are to curb global warming and create cleaner communities, we must learn to love other modes of travel. We have to ride our bikes, join electric carsharing services and use mass transit. But changing our travel behaviour will require enormous effort on both the individual and societal level.

There are many reasons for this. Two in particular led Agora Verkehrswende to commission *New Roads to Sustainable Travel*. First, travel behaviour is difficult to change in general because it is built on ingrained habits and routines. Second, our culture's media have long equated cars with freedom, and this idea continues to hold sway over many a mind.

The ramifications are clear: to entice people away from cars, we must develop marketing strategies for alternative modes of travel that are just as professional as those used by the auto industry. We need new ideas and stories to ensure that people do not perceive change in travel behaviour as a threat or a privation. We need a comprehensive narrative of spatial mobility that forgoes personal cars while still convincing large parts of the population.

Experience has shown that whenever safe bike paths are built or public transport is upgraded, the emancipation from cars improves people's quality of life. In most cases, the reduction in stress goes hand in hand with a reduction in costs. This is a good starting point for communicating the individual benefits of sustainable travel. Yet many decision-makers in urban transport planning, in transport policy and in public transport authorities underestimate the importance of using professional communication strategies. That is why *New Roads to Sustainable Transport* is, in part, an advertisement for advertising. It makes the case for the inclusion of this "soft" yet crucially important element in policy discussions about sustainable travel.

Of course, many "hard" elements still stand in the way of behaviour change: late trains, sidewalks blocked by parked cars, lack of carsharing services at the urban peripheries. Whitewashing these shortcomings will not make people any more likely to use sustainable travel options. But proactive advertising, when strategically deployed, can ensure that the shortcomings get talked about – which gives governments and administrations more reason to make improvements. Remember: advertising need not always wait until a new product – or, in this case, a new behaviour – is ready to go to market. It can also prepare the market to see the new in a positive light.

In this spirit, we wish you an enlightening and enjoyable read.

Wolfgang Aichinger and Christian Hochfeld
Agora Verkehrswende

Berlin, 10 July 2019

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1   See Statista (2019).

Contents

Summary

In the transport system of the future, passengers will be able to choose from an intelligent mix of climate-neutral forms of travel that largely obviate the need for personal cars. In a few German cities, this future is already in the offing. Nationwide, however, Germans still rely on private cars to meet most of their travel needs.

The "hard" factors that facilitate sustainable travel are now well-known: proper planning, infrastructure, laws, regulations, targeted levies, technical innovations. But smart policies and reliable services are not enough. People also have to use them.

This is where the "soft" factors come in. These refer to the emotional aspects that play a central role in people's decision-making such as lifestyle, social status and enjoyment. Communication campaigns for sustainable travel must be able to activate these emotions while reminding people of the rational benefits provided by alternative modes of transport.

This paper presents models from psychology and sociology for understanding the motivation and process of behaviour change. What is common to all these models is the insight – illustrated by the Behaviour Change Wheel (figure 7) – that behaviours change only when there is motivation, opportunity and capability. Simply supplying motivation by stressing the benefits such as saving time or improving the environment is not enough to change how people travel. Behaviour change also needs an environment that supports the new behaviour (such as a reliable infrastructure). And it requires that people possess the basic capability of engaging in the new behaviour to begin with. Those who do not have this capability – familiarity with mobility service apps or the ability to ride a bike, say – must acquire it before they can be expected to change their behaviour.

As the examples in this paper show, recent media campaigns and other forms of behaviour change communication have drawn on empirical models to create more effective strategies for encouraging sustainable travel. But they also employ techniques widely used in traditional product advertising. The AIDA approach communicates rational benefits along a four-step emotional process consisting of attention, interest, desire and action. The reframing approach provides an altered context of meaning that supports the creation of new values. Finding the right frame is a crucial part of communicating new ideas about mobility and paving new roads to more sustainable travel.

Communicating behaviour change as an attractive option

Behaviour is determined not only by rational argument. The emotions and the social environment play a strong role as well. For campaigns seeking to change travel behaviour this means that communication must not be limited to emphasising objective rewards. When it comes to the environmental benefits, for instance, it is important that the communication strategy not take a stern, admonishing tone. Rather, it makes more sense to communicate sustainable travel using appealing images and inspiring stories – examples of behaviour that people will want to follow in their own lives.

01 | Sustainable travel requires behaviour change

1.1 The hard and soft factors of sustainable travel

Transportation is a basic human need. It enables mobility, participation in social life and economic growth. But transportation is not all alike. It comes in many forms. Some generate less traffic; others generate more – much more.

Today, cars make up 75 % of kilometres travelled in Germany.[2] This model, which emerged during the postwar era, is no longer sustainable. It produces high levels of climate-warming emissions and is out of step with clean-energy efforts in the power sector. Moreover, vehicles powered by internal combustion engines harm human health. They release particulate matter and nitrogen oxide, which increase the likelihood of respiratory problems, and are a significant source of noise pollution, besides. The multi-lane motorways criss-crossing our cities – once a hallmark of modernity – have become an urban blight, lowering property values and reducing the overall quality of life for residents.

How do we account for the fact that a major part of the population relies almost exclusively on cars even in cities and regions with efficient, affordable and easy-to-use public transport? Why are so many willing to spend so much money for the privilege of spending hours stuck in traffic? Why do people often prefer to drive short distances when they can walk or bike there just as fast, if not faster?

Psychologists and sociologists have found that people's travel behaviour depends not only on concrete variables such as infrastructure, cost, time, local statutes and traffic codes but also on emotional and sociocultural ones.

Subjective factors play an especially important role in car use. Over the past decades, car ownership has become a cultural norm in industrialized countries. It signals social status, symbolizes independence and promises flexibility all while providing a refuge from the hustle and bustle of everyday life.

To change how people travel we must, therefore, move beyond traditional traffic planning with its focus on getting people from place to place as quickly, cheaply and comfortably as possible, and also concentrate on shaping the "soft" factors that steer our travel choices. Various communication strategies exist for doing this, from public information campaigns and targeted consultations to the involvement of local communities in the co-creation of new transport options.

1.2 The cornerstones of sustainable travel

The urgency of global warming demands sweeping changes in how people travel. These changes rest on two cornerstones. The first is the creation of systems that intelligently link different modes of public transport and vehicle sharing services. Such systems minimise private car use and cut energy consumption without restricting individual mobility. The second is the transition to clean energy in the transport sector. This means meeting the sector's energy demands with green electricity and climate-neutral fuels.[3]

Together, these cornerstones amount to nothing less than a transport revolution. Achieving them will require fundamental changes in behaviour. People will need to embrace electric cars if we are to switch from fossil fuels to clean energy.[4] And people will need to free themselves from the idea that cars are the only way to get from A to B if we are to introduce multimodal and intermodal passenger transport based on different combinations of walking, cycling, public transport and electric carsharing.[5]

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2 See Nobis (2018).

3 See Agora Verkehrswende (2017).

4 Behaviour change can, of course, also contribute to the decarbonisation of commercial transport. But because the influence of individual travel behaviour plays a relatively minor role in this sector, this paper focuses exclusively on passenger transport.

5 Multimodal transport refers to the use of multiple modes of transport within a given period of time (e. g. such as a week or a month). Intermodal transport means using multiple, interconnected modes of transport within a single trip. For more on these topics, see FIS (2011).

1.3 Of the many transport options, most go unused

In Germany too, personal cars continue to dominate the passenger transport sector in terms of total trips and kilometres travelled despite the clean-energy efforts of the past few years. Only in a few pioneering cities – Berlin, Frankfurt am Main, Bremen, Jena, Potsdam – do residents complete two-thirds or more of their trips without cars.[6] But even in these cities, ever-growing numbers of car commuters from surrounding regions keep the main arteries congested, pollute the air and undermine climate action. The general situation in Germany is much worse: some 50 % of the trips completed by cars are less than seven kilometres in length. Drivers could easily complete these and other trips using bicycles, public transport or other equally clean and safe options.

Instead, many people regard cars as the key to their mobility. As figure 2 shows, only 37 % of Germans aged 16 or over regularly combine multiple modes of trans-

port in their travels. Increasing numbers of innovative app-based mobility services quickly identify intermodal options, calculate trip cost, visualize routes and target new users.[7] For now, however, early adopters remain the primary users of these services. More than 95 % of Germans have yet to try a bike- or carsharing service.[8]

Despite these entrenched behaviours, Germans will need to travel differently if the federal government is to meet its climate targets and local administrators are to realize their transport improvement plans. And the right sort of communication is needed if people are to see these changes as benefits, not inconveniences.

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6   See Ahrens et al. (2015).

7   Providers like these are part of the shift away from personal motor vehicles to what is called Mobility as a Service, or MaaS. See Deloitte (2017).

8   See Nobis (2018).

Figure 1: The transportation network company Lyft advertises itself as an extension of New York's mass transit system, offering "one gajillion new stops". It presents multimodal transport as a step towards more individuality, flexibility and opportunity. But as studies have shown, Lyft has also positioned itself to compete again the city's bus services.
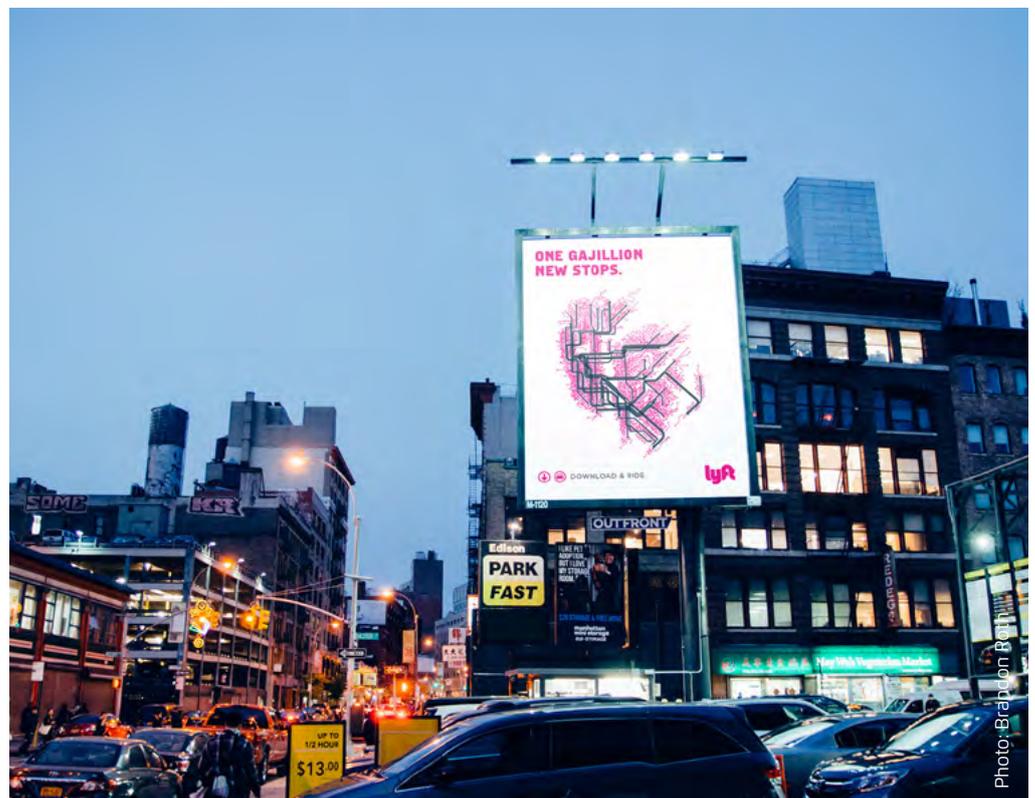
Shares of monomodal and multimodal transport users in Germany. 37 % of Germans aged 16 or over regularly combine different modes of travel.

Figure 2

Cars and mass transit

Mass transit

45 %

7 %

8 %

Cars

Cars, mass transit, and bicycles

4 %

Bicycles and mass transit

21 %

5 %

Neither cars, bicycles nor mass transit

Cars and bicycles

5 %

6 %
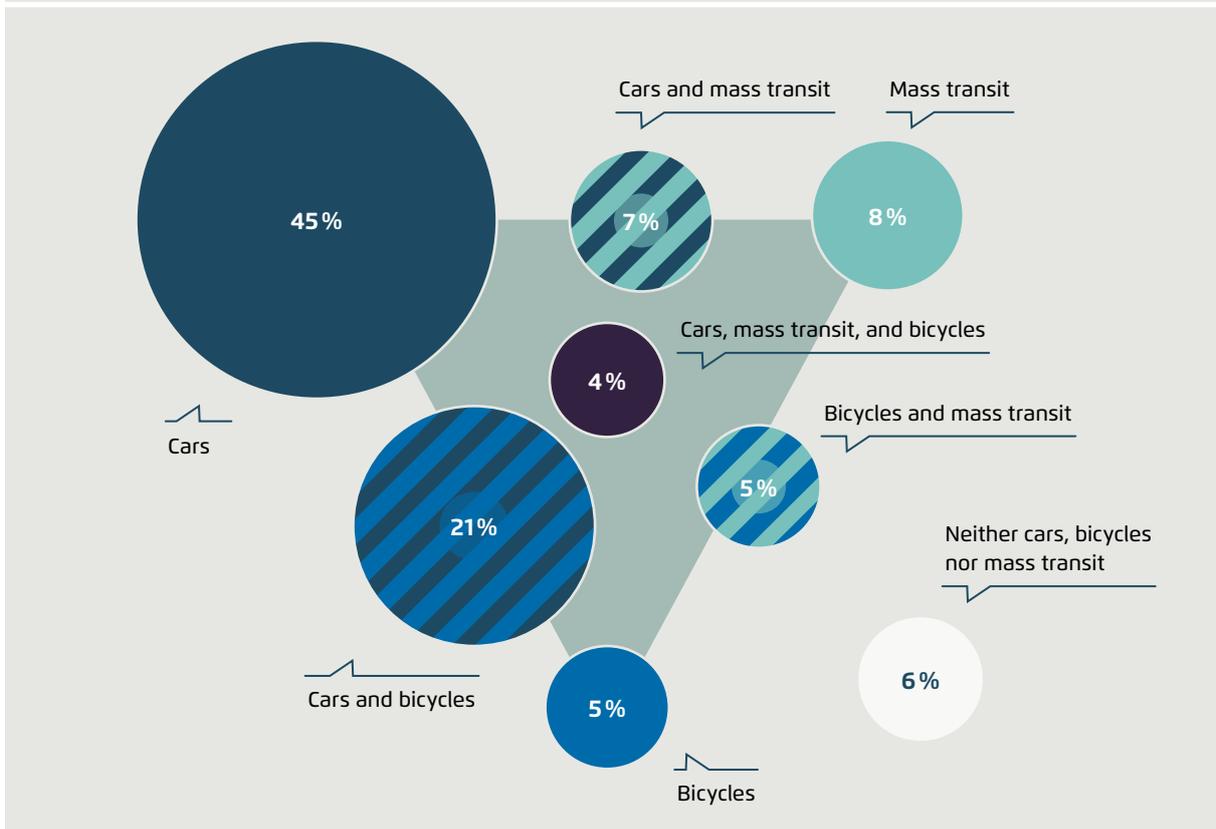
Bicycles

Adapted from Nobis (2018)

1.4 The task of changing travel behaviour

This paper examines scientifically tested strategies for portraying bicycles, buses, trains and multimodal transport as attractive alternatives to cars. It is directed at those who want to help ensure sustainable travel by using communication to change people's behaviours: municipalities and transport authorities, manufacturers, providers of environmentally friendly modes of transport, businesses, schools, universities and the housing sector.

The next two sections describe the most important theories and strategies that can facilitate behaviour change. Section 4 presents examples from advertising, marketing and applied fields that fruitfully enlist behavioural models for the promotion of sustainable travel.

A promising approach:
Science and practice in collaboration

Efforts to shape behaviour – whether through media campaigns, information programs or group consultations – are more convincing and effective when they are based on empirically proven models. Communication strategies that employ these models can significantly contribute to long-term changes in people's habits. This is why it is important that government agencies, advocacy organisations and communication professionals work closely together with behaviour change researchers from the moment they begin to conceive their communication strategies. Moreover, researchers can later evaluate the effect of the strategies and make adjustments when necessary.

02 | Understanding behaviour change: The most important approaches

Over the years, researchers primarily in the areas of psychology and sociology have developed various approaches to understanding the conditions of behaviour change. Despite the differences between them, all these approaches assume that both individual and social factors determine people's behaviours. This section briefly summarises the most important approaches for our work and identifies key insights for communication professionals who want to encourage more climate-friendly travel.

2.1   Rational choice theory

One of the most recognised frameworks for modelling human behaviour is rational choice theory. Its basic premise is that people make choices so as to maximise their utility. In its classical form, rational choice theory focuses exclusively on economic self-interest and ignores "irrational" determinants such as emotions and spontaneous impulses. More recent iterations of rational choice theory expand the idea of utility to include convenience and other subjective factors. In all versions of rational choice theory, its adherents believe that behaviour is goal-directed and determined by specific preferences or motives. People act by balancing the benefits of their desires against their costs, which can refer to money but also to any form of extra effort, be it time investment, concentration, planning, etc. Most rational choice theorists maintain that people choose the option that delivers the greatest benefits at the least cost.[9]

2.2   The impact of environmental concern

Researchers who study the role of environmental concern in decision-making want to understand how people's attitudes about the environment affect their behaviour. One of their main findings is that environmental concern influences behaviour only up to a point.[10] An explanation for this discrepancy is provided by the low-cost hypothesis. Developed by rational choice theorists, the low-cost hypothesis says that the likelihood of making a certain decision depends more on its costs than on its benefits.[11] For our case, this means that in low-cost situations, environmental concern is strongly predictive of pro-environmental behaviour. When the costs of pro-environmental behaviour are high, however, the effect of environmental concern is low.

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9   See Kunz (2004).
10   For more see, Grunenberg and Kukartz (2003).
11   See Preisendörfer (2011).

Using emotions to explain rational utility

If we want to change people's travel behaviour, we must communicate the utility of using alternative modes of transport. The nature of that utility can vary: faster, healthier, more affordable or more convenient. Though arguments of utility are supposed to be rational – and hence inherently persuasive – their force increases when they include emotional appeals and a good story.

For example, the city of Frankfurt am Main decided to promote a new train line with a series of amusing cinema commercials in which people who use mass transit reach their destinations faster than friends who decide to drive instead, much to the latter's consternation and surprise. The message is clear: switching from personal motor vehicles to public transport not only reduces harmful emissions; it also saves time.

The discrepancy between attitude and behaviour

The low-cost hypothesis explains why people with high environmental concern do not always act in pro-environmental ways. Typically, environmental concern leads to pro-environmental behaviour only when the required effort is low. Hence, if people are to make different transport decisions, it is crucial that the associated costs remain low as well. If people have to spend too much money or time or make too much of an organisational effort, they won't be likely to change their behaviours. Communication campaigns need to present the advantages of alternative modes of transport clearly, concisely and entertainingly. The easier it is for people to switch from cars to mass transit and bicycles, the more likely it is that they will do so. In this spirit, cities might send out information on climate-friendly transport options for new residents. This would encourage the recently transplanted to establish climate-friendly travel habits early on. For more on effective campaigns for new residents, see section 4.5.

Examples of low-cost behaviours include separating trash and turning off the lights when you are not using them. By contrast, many regard the use of alternative modes of transport as a high-cost behaviour. According to the low-cost hypothesis, this is why environmental concern does not necessarily lead to pro-environmental travel decisions.

2.3   Framing

In the social sciences, a frame is the set of concepts and perspectives through which we order and interpret everyday experience.[12] Depending on our frame, we implicitly make certain interpretations and fail to see others. Frames structure our perception of reality and influences which types of information we tend to retain and which we do not. In this way, frames generate ideas of social normality.[13]

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12   For more, see Goffman (1974).
13   Shove (2010) discusses the case of the postwar UK, where bicycle use declined to such an extent that it ceased to be seen as a normal social practice. As a result, residents in British cities were slower (and continue to be slower) to take up cycling as an alternative mode of transport than people in Germany and the Netherlands, where cycling remained common after World War II. A similar change can be found in bus use. In many countries today it is normal for adults to take the bus to work. In the US, by contrast, using the bus no longer represents normal social practice for adults – unless, that is, they are poor.

Proponents of practice theory have argued that common practices also constitute frames. This clearly applies to typical travel behaviours as well as other forms of social practice. The attitudes people have about travel form a lattice of meanings through which to consider transport options.[14]

The effect of a society's frame on travel behaviour is most obvious when it changes, as numerous examples in the history of personal transport show. In the postwar era, the car became a symbol of prosperity. Only those – nearly all of them in the working class – who could not afford to purchase an automobile continued to rely on bicycles and buses to get to work. Today, the conspicuous consumption of urban elites expresses itself in, among things, owning the right bicycle. Moreover, the style of bike people ride – fixies, cargo bikes with electric assist, folding bikes – symbolises their membership in a specific lifestyle group.

If frames can change, then it also stands to reason that information and policies can be used to shape them. The communication and advertising industry has long understood that marketing messages work when they are able to create new frames that change people's perception and behaviour. An example of a conscious effort to create a new frame of mind in the transport sector is the Deutsche Bahn's 2015 campaign "Diese Zeit gehört Dir."

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14   See Götz et al. (2016).

Positively framing new types of travel behaviour

Communication strategies designed to facilitate climate-friendly travel need to create credible frames that change the way people see intermodal passenger transport. The use of multiple forms of transport must be portrayed as forward-facing, modern and hip; the exclusive reliance on personal vehicles, as backwards and passé. By analysing people's travel attitudes, researchers can identify the best symbolic frame to address a particular target group.[15]

Rational choice theorists have argued that feelings of social belonging and recognition are basic human needs and thus provide a high level of subjectivity utility. Accordingly, communication that successfully links climate-friendly travel with social belonging and modern values can change people's behaviour even if doing so requires much effort.[16]

In a series of commercials, the German railway company emphasised that train travel not only is typically faster door-to-door than cars and planes but also creates space for other activities. Conversely, the automobile industry has tried to exploit people's desire to live modern urban lifestyles by reframing the emotions associated with cars. For instance, one recent billboard displayed a premium sedan next to its proud owners, a young couple who bore all the trappings not of stodgy affluence but of cool hipsterdom – including the obligatory fixie at their side.

2.4 The theory of planned behaviour

The theory of planned behaviour states that human behaviour is mainly guided by behavioural intentions, or plans.[17] Psychologists have identified three key factors determining the likelihood that people will act on their plans[18]:

- **Attitude:** The attitude one has towards a behaviour depends strongly on how he or she values its expected outcome. A person's attitude towards mass transit, for instance, results from a consideration of its advantages and disadvantages.

- **Subjective norms:** Subjective norms about a certain behaviour reflect our perception of whether other people approve or disapprove of our performing that behaviour. In other words, subjective norms result from social pressures on individuals. Would an individual's significant others and friends approve if he or she performed the planned behaviour – switching to mass transit, say?
- **Perceived behavioural control:** Perceived behavioural control is the individual's perceived ease or difficulty of performing a new behaviour. In the context of personal transport, people might ask: Will I be able to navigate the mass transit system? Will it get me to my destination? Is public transport reliable enough that I can retain complete control of my everyday comings and goings?

Each of these three factors influence the other and have a cumulative effect on behavioural intention. Figure 3 illustrates the relationship between these variables and behaviour.

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15   See Ohnmacht et al. (2008).
16   See Esser (1996).
17   See Ajzen (1991).
18   See Hunecke (2006).

Theory of planned behaviour	Figure 3
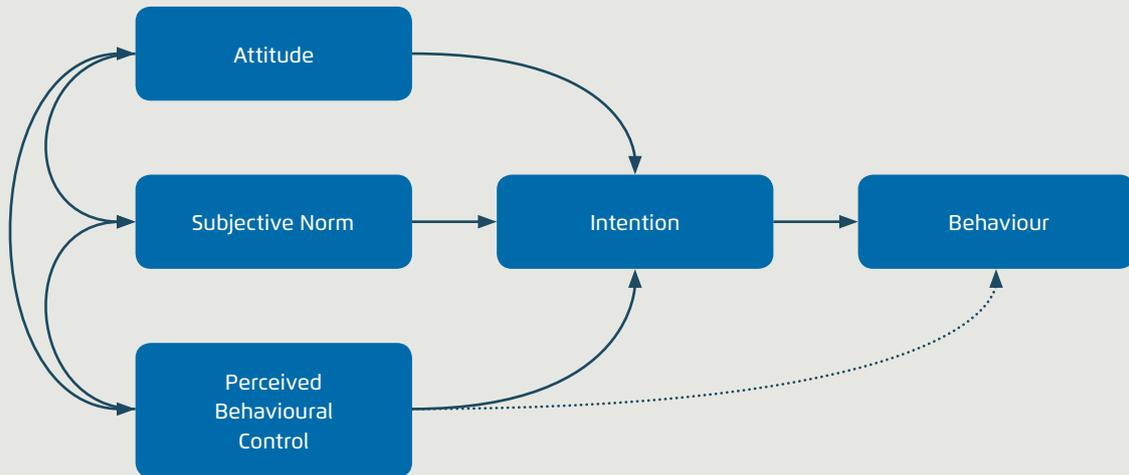
Adapted from Ajzen (1991)

Strengthening behavioural intention

Planned behaviour theory states that people's attitudes, subjective norms and sense of perceived behavioural control indicate the likelihood that a behavioural intention will lead to an actual behaviour. This insight can help create more effective communication campaigns to facilitate climate-friendly travel.

Consider the case of company vehicles, which many companies make available to employees for personal and business travel. The right sort of media campaign can help popularise multimodal alternatives to company cars such as company pedelecs, mass transit passes and railcards. Financial incentives and trial offers can encourage employees to try these new modes of transport, which creates and reinforces behavioural intention. The more climate-friendly options are endorsed by companies and used by employees, the more they will become a new social norm supplanting the company car paradigm. It is important that the new travel routines are easy and reliable, from reservation and use to invoicing and reimbursement. Indeed, ease of use must figure at the forefront of the associated behaviour change communication.

2.5   Nudging

In 2008, Richard Thaler and Cass R. Sunstein published *Nudge*, a book that brought nudge theory to a wider audience. A popular concept in behavioural economics, nudging describes the use of small and indirect interventions to influence behaviour without changing people's attitudes or intentions. In some cases, people do not even notice nudges when they encounter them.

Nudging does not communicate a particular message. Rather it creates a change in environment that functions as a signal to which people are likely to respond. The most common nudging technique is the use of defaults. One area where this technique has been successful is organ donation. Austria and other countries employ an opt-out system in which all citizens are automatically registered for organ donation unless they choose otherwise. This is opposed to the more common opt-in system, where people become organ donors only after giving their consent. After Austria introduced an opt-out policy, the number of organ donors increased by nearly 100 %.[19] The opt-out system works because it makes the desired behaviour the default option. People can decide to behave definitely but doing so requires extra effort.

19   See Rauner (2015) and Ekardt (2017).

Less spectacular but just as effective examples of nudges are default eco-wash settings on washing machines and default double-sided printing on computer printers. Another instance of nudging is the placement of healthier foods such as fruit and vegetables at eye level in workplace cafeterias. We can imagine similar strategies for automobiles, such as default green settings that limit top speeds.

Some have raised concerns about the ethics of nudging, arguing that it is ultimately paternalistic and manipulative, especially when it rises to the level of government policy. But Sunstein has argued in response that some form of choice architecture is inevitable with any public project or policy. We can see a clear example of this in transport infrastructure. The infrastructure governments choose to build contains all sorts of nudges that influence travel behaviour, whether directly or indirectly. Studies have shown how free parking lots and the creation of multi-lane roads generate additional traffic. Researchers have found that other defaults can improve traffic behaviour. One of these is the creation of shared spaces, areas that eliminate the boundaries between pedestrian areas, cars, and other modes of road use. Due to the greater sense of uncertainty, drivers automatically reduce their speed. Figure 4 shows one such shared space in Germany.

Figure 4: Street environment design can nudge behaviour, as in this shared space scheme in Saxony-Anhalt.

2.6 The transtheoretical model

The transtheoretical model assesses people's readiness to implement long-term changes in their attitudes and behaviours. Developed as a tool for encouraging healthy behaviour and disease prevention, the transtheoretical model understands change as a progression through six distinct stages, as shown in figure 5.[20] Recently, researchers have applied this modelling to travel behaviour.

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20 See Prochaska et al. (1994); Prochaska and DiClemente (2005).

- In the first phase, known as "precontemplation," people have not yet resolved to change their behaviour in the foreseeable future. They are often unaware that a particular behaviour is problematic and they are unwilling to think about the consequences. Social pressure during this phase can even lower people's readiness to think about the behaviour more closely.
- In the second phase, "contemplation," people begin to recognise that their behaviour is problematic though they are not yet ready to take action because they are still ambivalent about the change. In the context of travel behaviour, a commuter might say, "I know that it makes no sense to take the car for short trips.

The transtheoretical model describes the process of behaviour change in six stages   Figure 5
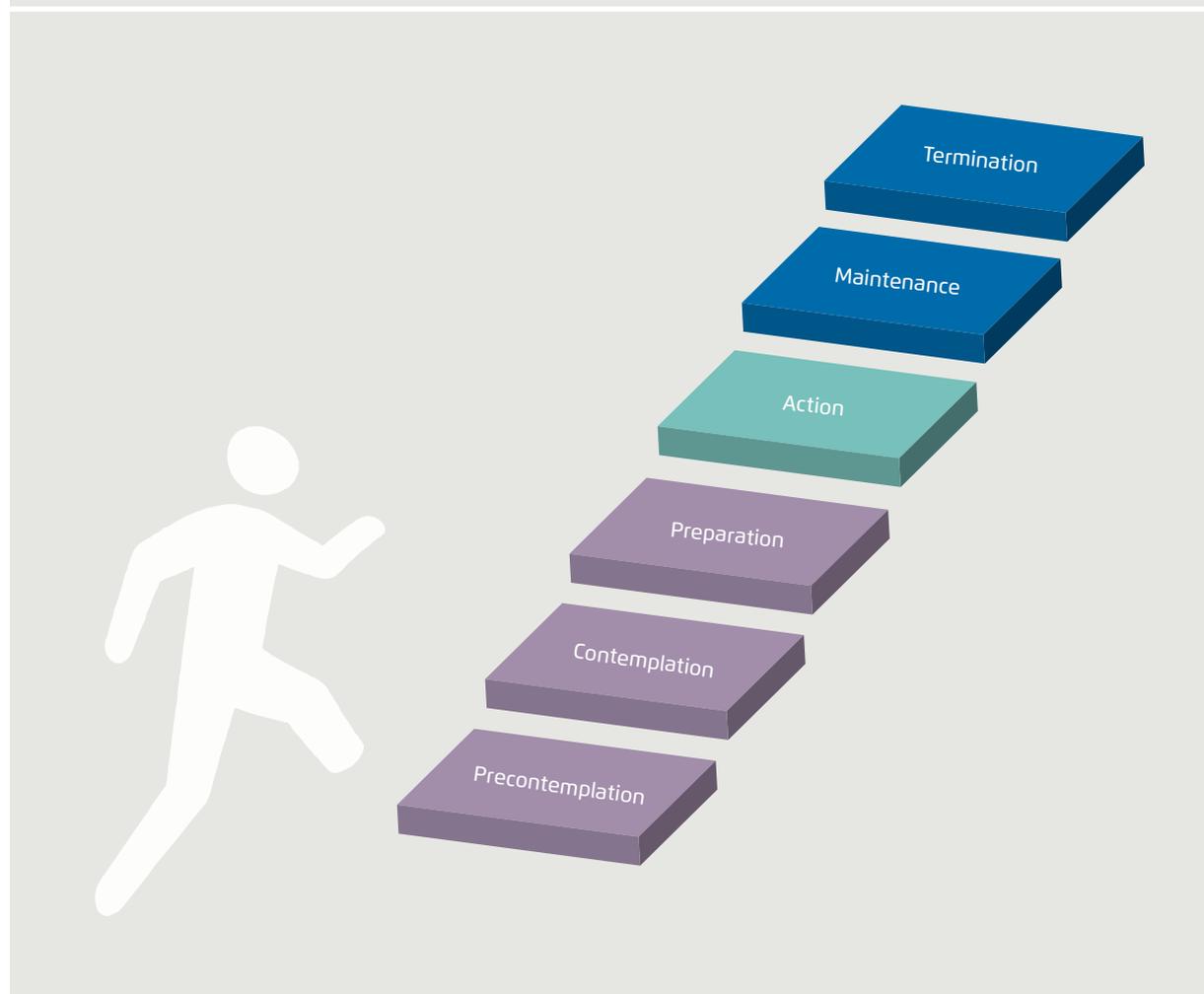
Authors' figure

I really want to take the train and ride my bike more often, but the weather is bad at this time of year. I will start in the summer."

- In the preparation phase, people are highly motivated to start behaviour change. They express their intention to change their behaviour in the foreseeable future and take the initial steps. Though they want to change, this stage is unstable, and people can backslide. A typical statement for our case might be: "I already bought a new bike and I downloaded the app from the public transport association and determined which connection gets me to work."

- In the fourth phase, "action," people have begun to take specific actions for change. The new behaviour has been ongoing for more than a few days but less than six months. The risk of relapse is the highest during this phase. Our commuter would likely say something like this: "I have ridden my bike to work multiple times but once I got caught in a downpour and arrived at work soaking wet. I will have to think hard before I do that again."

- In the fifth phase, "maintenance," people have been able to perform the new behaviour for at least six months and take active measures against setbacks. Once again our commuter: "I take my bike regularly to work, I own a good rain kit and when the weather is really bad I'll just take the train."

- In the final phase, "termination," individuals are confident that they will continue their new behaviour. The longer this phase lasts, the more stable the behaviour becomes. The commuter might say: "I do everything I need without a car – I can get to work, to the store, to day care and to destinations in my free time. The next time the car needs a big repair, I am getting rid of it. In urgent cases, I will use a carshare."

Measurable success: The transtheoretical model in practice

The transtheoretical model has already proven itself as an effective means of changing travel behaviour. For instance, the city of Frankfurt am Main recently launched a program in which new residents receive telephone interviews. If they indicate that they are ready to change their travel behaviour, the interviewer asks questions to determine which phase of the transtheoretical model most accurately describes them. The interviewer then suggests ways to increase the likelihood of behaviour change best suited for the phase. For more, see section 4.5. The German environment ministry's campaign "Kopf an: Motor aus," which aims to achieve zero-carbon transport for short trips, is also based on this model.[21]

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21   For more on this campaign, see www.kopf-an.de.

03 | A general theory of behaviour change: Capability, opportunity and motivation

All the models of behaviour change discussed in the previous chapter focus on individual intentions and causes. Some models emphasise the internal factors; other stress the external ones. Michie et al. (2011) synthesised the most important theories into a comprehensive framework known as the Behaviour Change Wheel. This structured approach has become an important resource for understanding behaviour, including travel.

The wheel's hub describes the three basic sources of new behaviour:

- **Capability:** Those who want to change their behaviour must know how or learn how. Engaging in new behaviour requires physical and psychological capabilities as well as skills and knowledge. A person who can't ride a bike, is unfamiliar with the transmit system or does not know how to operate a carsharing app will be unable to make use of these alternative modes of transport.

- **Opportunity:** Behaviour change relies on an enabling and supportive environment. It requires natural and social circumstances that facilitate the desired behaviour. In the case of new travel behaviours, infrastructure such as subway lines, bike paths and pedestrian zones certainly plays a role. But so too do the norms and mindsets of a person's social environment.[22]

- **Motivation:** New behaviour requires positive impetus. Motivations expresses itself in setting goals, making decisions, and enjoying the desired behaviour. Subjective utility, as defined in rational choice theory, also enters into the motivational calculus.

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22   See Götz and Schubert (2000).

New behaviour arises from three sources   Figure 6
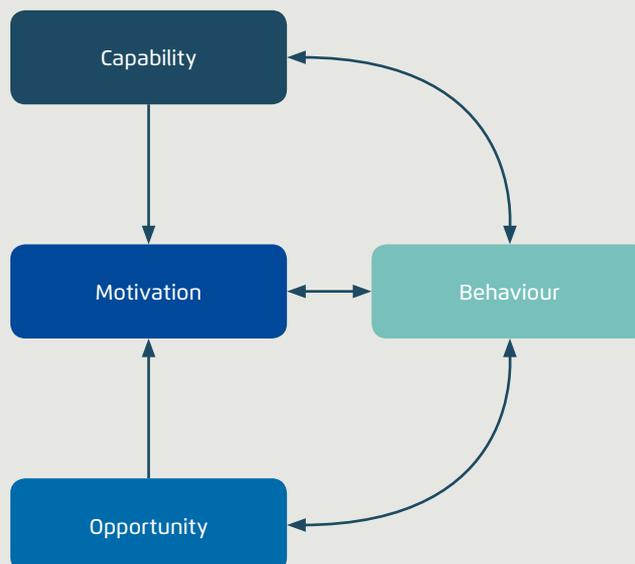
Adapted from Michie et al. (2011)

Motivation alone insufficient for behaviour change

New behaviour requires the right blend of capability, opportunity and motivation. Marketing campaigns that want to effect a permanent change in people's travel behaviour must address all three. The communication of motives for change behaviour must therefore take place in a favourable environment. This means good policies and good conditions. Sustainable travel is not only about subjective intention; it is also about objective convenience. Just as important, individuals must possess the appropriate skills and knowledge needed for changing their travel behaviour.

In addition to the three sources of behaviour, the Behaviour Change Wheel identifies intervention functions and policy categories to change them. As figure 7 shows, these are located in the second and third layers, respectively. The wheel facilitates the development of a systematic approach that considers all the determinants of behaviour.[23]

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23   Instructive examples can be found in Michie et al. (2011), though they all relate to healthcare.

The Behaviour Change Wheel provides an overview
of the sources of new behaviour together with the
intervention and policy categories that can change them

Figure 7

Adapted from Michie et al. (2011)

The problem of motorised school runs: Learning from the Behaviour Change Wheel

Communication strategies for sustainable travel behaviour should not limit themselves to increasing people's motivation for switching from cars to alternative modes of transport. As the Behaviour Change Wheel shows, they must also be integrated with other measures. The oft-cited "school run" problem is a good example.

Each weekday, many parents drive their children to nearby day cares, schools and extra-curricular activities. These car trips are responsible for untold amounts of CO_2 emissions. If we want to encourage parents and older children to go by bike or on foot instead, our chances of success will be higher if a system of safe bike paths, foot paths and bike parking racks is already in place. It is also important to consider the knowledge and skills of parents. Do they need additional information or instruction? Are some parents unable to ride a bike or lacking the physical fitness to make the trip? Moreover, the communication strategies must eliminate prejudices about the dangers of cycling and create a new desire for change among children, parents and teachers. As a supplementary measure, municipalities, police and schools can institute temporary road closures around schools for motor vehicles to facilitate alternatives modes of travel.

04 | Behaviour change: Examples from communication practice

The empirically tested models presented in the previous two sections provide sensible approaches to changing travel behaviour. The following examples illustrate how these models have been used for communication purposes. These examples stem from applied communication (marketing and media campaigns) and applied research (living labs).

4.1 From attention to action: The AIDA model in product advertising

Private companies have clear objectives: to sell as many products or services as possible and to increase revenues and profits. To achieve these objectives, they must make sure that their product or service stands out from the competition.

The AIDA model (figure 8) was created to help companies increase their sales. The model describes the four key stages that consumers must pass through from the time

they become aware of a product until purchase.[24] As can be seen in figure 8, these are attention, interest, desire and action.

- **Attention** describes the moment the consumer becomes aware of a product or service. Without awareness, the consumer won't proceed to the next stages.
- **Interest** indicates that a consumer wants to find out more about the product or service.
- **Desire** means that that the consumer views the product or service favourably. Typically, desire arises because of an entertaining ad or a good story.
- **Action** is the moment when the consumer decides to make a purchase.

The principles of the AIDA model apply to communication campaigns for encouraging climate-friendly travel behaviour. This is because building a sustainable transport system also involves the sale of products and services such as tickets, bicycles, e-bikes, electric

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24   See Kotler et al. (2007).

The AIDA model forms the basis of many of today's commercial advertising campaigns	Figure 8

Authors' figure
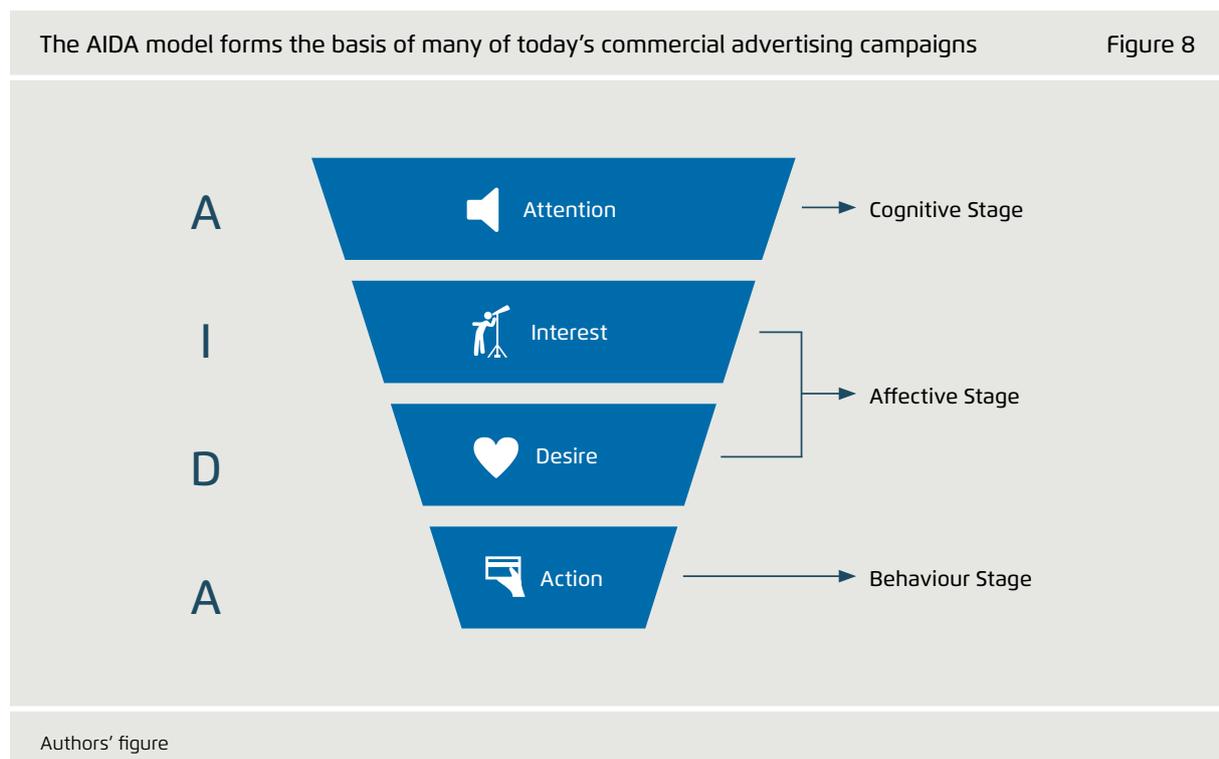
scooters and cars, and vehicle sharing services. These products and services represent what the Behaviour Change Wheel calls "opportunities". They affect travel behaviour just as much as efficient mass transit systems and good infrastructure.

There are important differences between sales marketing and change behaviour communication, however. Whereas sales marketing aims is to make a new product or service seem desirable, change behaviour communication wants to make a new behaviour seem worthy of adoption. The action is not the purchase of a particular product or service but engagement in a particular behaviour. Commercial advertising relies on an effective sales strategy that makes it easy for consumers to acquire a product or service once they resolve to buy it. (Some

electric car companies have fallen notoriously short in this regard.) Likewise, behaviour change communication relies on an infrastructure that makes it easy to practice a new behaviour once an individual resolves to do so. What both forms of communication share is the use of emotional strategies to make something seem desirable.

4.2 Generating new values: some recent cycling campaigns

Like product marketing, behaviour change communication works best when it cleverly combines different types of messages that appeal to its target group. For example, several years ago the advertising agency HELIOS created

The value triangle: perception, identification and involvement   Figure 9
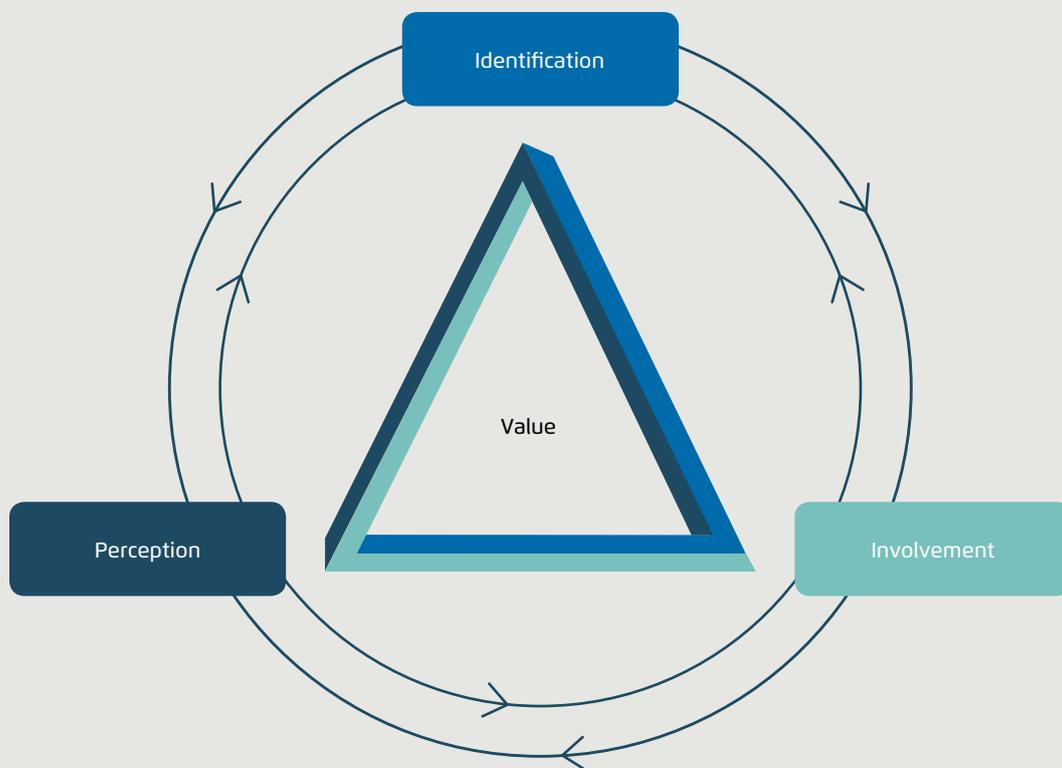
Adapted from HELIOS GmbH

bicycle image campaigns for Hanover, Munich and Oldenburg. Through a host of interventions – songs, YouTube videos, safety measures, colourful posters, mass bike ride events, fashion shows – the campaigns mixed the serious with the humorous, appeals to reason with signals designed to trigger an emotional response. Following the triangle model in figure 9, the campaigns generated new values by increasing the visibility of

cycling, promoting identification with the cycling lifestyle and encouraging more people to ride their bikes.[25]

The campaign for Munich rebranded the city as Germany's bike capital (figure 10). Oldenburg's campaign touted the city's love for cycling. Both strategies sought

25   See Innerebner (2013).

Figure 10: HELIOS's campaign for Munich deployed high-visibility messaging in prime locations such as the massive billboard overlooking Marienplatz or a mass assembly of cyclists on Odeonplatz. The use of classical city symbols – the billboard shows a figure of Bavaria with a bicycle at her side – encouraged people to identify with the campaign. The campaign also promoted involvement.

to move cycling from the niche to the mainstream.[26] For Hanover, HELIOS created an official bicycle anthem and video set to the tune of Tom Jones's "Sex Bomb," a playful way of making climate-friendly commuting seem sexy.[27]

4.3 Proactive reframing: the BVG campaign in Berlin

The award-winning "Weil wir Dich lieben" campaign of the BVG, Berlin's public transport authority, uses self-mocking ads that attempt to put a humorous spin on the negative experiences that mass transit passengers sometimes have. With posters in train stations and tweets and videos on social media, the campaign is directed at Berlin's many unconventional residents who expect a certain rhetorical finesse. One ad, an ironic allusion to the notoriously gruff demeanour of Berlin natives, proclaims in tabloid style, "Too Nice! Bus Drivers to Undergo

Unfriendliness Training".[28] Two of the campaign's videos have gone viral with millions of hits each. "Is mir egal" pokes fun at the blasé attitudes of BVG employees,[29] while "Arie" features passengers complaining about the BVG to the music of Mozart's Queen of the Night aria.[30]

The image campaign urges passengers to photograph everyday annoyances and post them on BVG's social media accounts. This turns personal experiences into public events that passengers can follow and comment on. In this way, the BVG can meet its customers eye to eye while still having the last word. The point is to transform the much-maligned transit system into an authentic "Berliner," warts and all. The BVG's brand of meta-irony gets people to laugh *and* think, which makes the transport authority more likeable. Though the official tagline is "Weil wir Dich lieben" ("Because we love you"), the real message of the campaign is that passengers can learn to love the BVG.

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26   See HELIOS GmbH (2019 a).
27   See HELIOS GmbH.

28   See BVG (2016).
29   See BVG (2015).
30   See BVG (2017).

Figure 11: A poster from BVG's award-winning "Weil wir Dich lieben" campaign. Following the AIDA model, the poster uses double meaning to attract attention while encouraging passengers to buy a yearly transit pass. Information about savings keep passengers interested and the emotional message in the photograph – it shows a couple who recently married after growing tired of the dating scene – activates passengers' desire and invites them to identify with the ad.

Figure 12: This still from a campaign commercial for Zurich's mass transit system catches viewers' attention with an un-expected juxtaposition. The taglines "I am a ship" and "One ticket for every situation" high-light the advantages of multimodal transport.

The underlying psychology of the BVG's campaign draws on several of the behavioural models discussed in the previous sections, in addition to the traditional techniques of product marketing. It creates a new frame for approaching negative passenger experiences and draws people attention to new opportunities (sometimes imperfect, in the case of Berlin), as defined in the Beha-viour Change Wheel. The campaign also arouses interest per the AIDA model and stabilizes existing behaviour as described in the termination phase of the transtheore-tical model. With these elements in place, passengers are more likely to respond charitably to annoyances such as train cancellations and long delays. The campaign also has ties to planned behaviour theory. It finds a new, proactive way to anchor public transport in normative belief and to manage passengers' sense of perceived behavioural control. As one poster says, "Just say 'I do' – and all the city's modes of public transport are yours."

The campaign seems to have been very effective. After its launch, the BVG asked passengers about their attitudes. 42 % of those surveyed said that the ads improved their image of the BVG. Only 2 % said that they worsened it.[31]

4.4 Simply communicating multimodal transport: The VBZ campaign in Zurich

Ten years ago, the city of Zurich launched an innovative campaign to promote multimodal transport. The Zurich transport authority (VBZ) introduced tickets whose price included the use of a park & ride spot on Lake Zurich, a ferry ride to the city and access to the local tram, bus and the aerial tramway system. The promotion was accom-panied by eye-catching commercials designed to sur-prise viewers. In one, a tram boating through the water reaches the shore and continues on land, whereupon the tagline appears: "I am a ship." Another one – a still from the video is shown in figure 12 – also shows a tram cros-sing the lake, followed by the short message: "One ticket for every situation."[32]

Capturing the essence of multimodal transport, making it seem attractive and motivating people to use it are some of the most difficult tasks of transport behaviour communication. The VBZ campaign succeeded in all three, which is why it should be a source of inspiration for future communication strategies.

31   See Beck (2017).

32   Zürcher Verkehrsverbund ZVV (2012).

The Zurich transport authority has also led the way with regular questionnaires to determine the favourite mode of transport among local residents. Time and again, the winner has been the tram, even among those who own cars, and even when those car owners are wealthy bankers.[33] This has prompted the city to offer tram-themed merchandise such as retro-styled post cards. Today, the old trams have become cult objects and collectors pay tidy sums for vintage parts and memorabilia.

4.5 Triggering goal-directed behaviour: dialogue marketing for sustainable travel

Twenty years ago, the marketing provider and researcher Socialdata developed an individualised marketing approach known as IndiMark. It is a form of dialogue marketing tailored to households that are interested in using mass transit. It consists of mailed surveys, telephone interviews and in-person interviews. Since its development, IndiMark has been deployed in over 250 cities across Europe, the US and Australia. According to before-and-after studies, mass transit use increased by an average of 19 % in German cities where IndiMark campaigns occurred. In Nuremberg, for instance, the share of trips by public transport among all trips made in the city rose two percentage points, from 20 % to 22 %, while the share of trips made by car fell by one percentage point. Cost-benefit calculations performed by Socialdata indicate that the increased passenger revenue meets or exceeds the cost of carrying out an IndiMark campaign.[34]

Another well-tested marketing strategy is Omniphon's new resident marketing campaign, which has been used now in Aachen, Bremen, Frankfurt am Main, Halle, Munich, Stuttgart and other German cities. Its basic premise is that people who have recently relocated are in a phase of life-change, which makes them more open to changing their travel behaviour. Omniphon's communicational strategy consists in calling new residents and sending them helpful materials such as transit maps and free passes for public transport. Expressed in terms of the Behaviour Change Wheel, this approach informs new

residents about existing opportunities and minimises behavioural effort that might otherwise impede change, as predicted by the low-cost hypothesis.

Omniphon's new resident marketing campaign in Frankfurt am Main reduced the share of trips made by car relative to total trips by 14 percentage points, from 32 % to around 18 %, while increasing the number of trips made with bicycles, with mass transit and on foot. In Halle, the campaign lowered the share of car trips from 32 % to 22 %. According to a 2006 assessment, Munich saw a three-percentage-point drop in car trips (from 30 % to 27 %) and an eight-percentage-point rise in mass transit trips (from 33 % to 41 %).[35] The marketing campaigns have also proven effective at persuading long-time residents to use alternative modes of transport.[36]

Behaviour change communication works best when it combines the most effective methods. This is the approach used by Sustrans, a UK charity that promotes walking and cycling. Like individualised marketing and new resident marketing, Sustrans relies on one-on-one interviews for collecting information. But it also goes a step further by developing custom travel solutions, based on a phase theory similar to the transtheoretical model and using the positive imagery of emotional marketing. Ultimately, Sustrans employs a technique akin to nudging (section 2.5).[37] Its combination of strategies has led to a significant increase in the number of people who regularly travel by bike.[38]

4.6 Living labs and co-creation

Numerous studies have shown that it is impossible to gauge the true effects of behaviour change communication under controlled laboratory conditions. In the real world, behaviour change takes place in complex conjunctures that contain a variety of variables. This is why researchers like to study the impact of behavioural interventions in actual situations – cities, districts, homes.[39] This approach to research, known as a living lab,

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33 See Ott (2018).
34 See Brög et al. (2009).

35 See Bamberg (2010).
36 See Klinger (2014).
37 See Ruoff (2017 a).
38 See Ruoff (2017 b).
39 See Schneidewind (2014).

Figure 13: Image from a new resident marketing brochure for Munich: Multimodal transport in everyday life

has several advantages. It allows researchers to observe behaviour in the complexity and variety of authentic social ecosystems instead of in isolation. Moreover, if problems arise solutions can go directly into optimising the system. Examples of living labs are the Future City Lab at the University of Stuttgart[40] (figure 14) and City-2Share, based in Munich and Hamburg.[41]

Typically, living labs bring together representatives from civil society and the realm of practice to produce a mutually desired outcome.[42] This co-creation approach generates insights on behaviour change readiness from the bottom up. Such insights are socially robust and are less likely to encounter resistance than top-down solutions. The impetus for living labs can come from local residents, from science, from municipal administrations or from politics.

Living labs and co-creation are part of a reorientation of the applied sciences towards experimental designs that permit optimisation and development from within. The focus is more on advancing successful processes and products than on achieving methodological perfection. Living labs can start at various stages of the transtheoretical model of behaviour change, from preparation to termination.

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40   Universität Stuttgart (2016).
41   City2Share-Projektpartner (2018).
42   See Schneidewind (2014).

Figure 14: At the University of Stuttgart's Reallabor für nachhaltige Mobilitätskultur, citizens together with researchers and administrative officials test out new ways of using urban spaces. Here they have gathered to eat on a former parking lot. Like the bicycle campaigns in Munich, the projects and initiatives of the Reallabor aim to create visibility, identification and involvement.

Photo: Stadtlücken e.V.

05 | Conclusion: Lessons from science and practice

As this paper has emphasized, interventions to change behaviour are more likely to be successful if they are based on empirical knowledge and proven models. This is no less true for campaigns meant to initiate and facilitate changes in travel behaviour.

By way of conclusion, we would like to summarize the key lessons from the models and examples discussed in the preceding sections. The first is that the communication of motives for sustainable travel is most effective if specific measures or favourable circumstances already exist that support the desired behaviour. As the Behaviour Change Wheel shows, an individual must not merely want subjectively to change; changing must also be objectively convenient. It is important, therefore, that communication strategists consider the skills and knowledge of their target group. In some cases, measures may be necessary that lay the groundwork for change behaviour.

The second lesson is that communication must focus on a core message that the addressee learns gradually through repeated exposure. The message can be an attractive social setting, a desired value or the new behaviour itself. Because repeated messages tend to be boring, it is crucial that the message strike an emotional chord – whether through irony, provocation or a more straightforward approach – that is tailored to the attitudes, motives and barriers of the targeted group or social environment. Frame theory tells us that communicating emotion does not mean neglecting rational utility. Rather, it is about ordering the latter in a new framework of meaning.

The art of communication consists in connecting rational utility with emotional appeal. For instance, a campaign might tie the objective benefits of cycling – fast, cheap, healthy, environmentally friendly – to the symbolism of a city, a cultural climate or a lifestyle. Another might take a playful tone when highlighting the advantages of public transport so that driving seems stressful and close-minded by comparison.

So far, such artful communication has been rare. Only occasionally have campaigns managed to portray intermodal and multimodal transport use as an everyday practice that is intelligent and fun as well as collectively and individually beneficial. The Swiss have come up with some original approaches. Germany has produced little of equal calibre.

The lesson of individualised marketing is to pick the low-hanging fruit first. That is, start by addressing those who are already open to or convinced of the desired behaviour and focus on areas where infrastructural opportunities are already in place. The likelihood of behaviour change in this phase of the transtheoretical model is high provided it is accompanied by a supportive environment.

The main lesson from the Behaviour Change Wheel is that communication strategies to promote climate-friendly travel succeed when they integrate other systematic measures. Even so, campaigns should not overextend themselves. It is better to begin with realistic goals such as a 15 % increase in mass transit using existing infrastructure and then to work incrementally towards the ultimate target.

At the end of the day, people will change their travel behaviour only if they believe that the new behaviour is more beneficial to them than their previous travel habits. Equipped with the right behavioural models and applied communication strategies, we can – and we must – do a significantly better job at convincing people that sustainable travel is worth it.

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In partnership with key players in the field of politics, economics, science and civil society, Agora Verkehrswende aims to lay the necessary foundations for a comprehensive climate protection strategy for the German transport sector, with the ultimate goal of complete decarbonisation by 2050. For this purpose we elaborate the knowledge base of climate protection strategies and support their implementation.

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