Why are cyclists the happiest commuters?

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Abstract

This session examines why cyclists are consistently shown to be the most satisfied commuters. Calling upon ethnographic research with cyclists, exercise psychology, and interviews from our own e-bike research at the University of Auckland, I ask what makes cycling the most enjoyable way to get around, and how we can use this information to improve cycling promotion and infrastructure design. I also address the question of which bits of cycling experience are 'fundamental' to cycling enjoyment, and how this might differ between cyclists and e-cyclists.

Introduction

Urban designer Florian Lorenz calls traditional arguments in favour of the bicycle (efficiency, sustainability, equality) Bicycle 1.0. Most people know this stuff, he argues, so let's start working on Bicycle 2.0. But what is missing? The fact that the bicycle is such a powerful 'multiple satisfier' (Horton, Cox, & Rosen, 2007) that can improve our health, our economies, and our environment all at the same time, at such low cost, is surely still such a remarkably underappreciated feat? But Lorenz is right, we tend to focus a lot on the 'virtues' of cycling while missing perhaps its strongest selling point: it's a particularly enjoyable way to get around.

Cyclists are the happiest commuters. They are consistently shown to have the highest levels of mode satisfaction (Gatersleben & Uzzell, 2007; Martin, Goryakin, & Suhrcke, 2014; Paige Willis, Manaugh, & El-Geneidy, 2013; Singleton, 2018; Smith, 2017; St-Louis, Manaugh, van Lierop, & El-Geneidy, 2014) (Figure 1), and switching from a car or public transport to a bike for your commute appears to produce a noticeable bump in most people's psychological wellbeing (Martin et al., 2014). Yet the reasons for this satisfaction remain understudied. Compared to the abundance of research on why people choose to drive, explorations of the experiences of active transport users are still rare (Brown, 2017; LaJeunesse & Rodríguez, 2012).

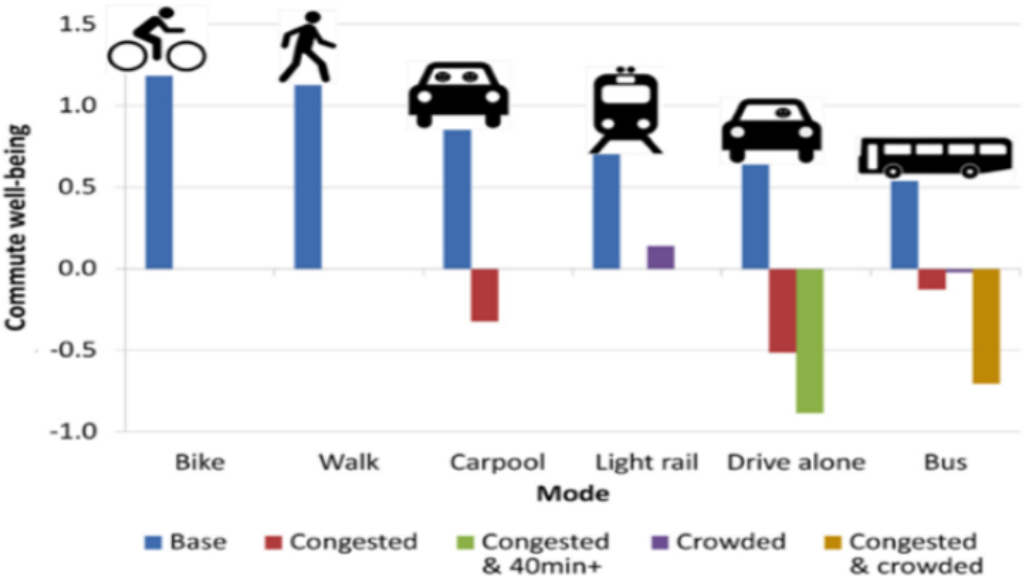

Figure 1. Commute satisfaction by mode (Source: Smith, 2017)

We see glimpses of interest in cycling experience and cycling pleasure emerging within the work of the transport researchers who have developed the concept of 'travel liking'. However there is still a degree of incredulity underpinning the concept. Transport planning remains dominated by models of transport 'efficiency', that have a tendency to understand travel as "nothing more than 'clock time' passing'' (Middleton, 2009:1943) or "dead time" that people seek to minimize (Hannam, Sheller, & Urry, 2006:12).

In their paper, *Uniquely satisfied: Exploring cyclist satisfaction* transport planner Devon Paige Willis and colleagues point out that different transport modes have quite different effects on our nervous systems (Paige Willis et al., 2013). Driving, particularly in congested conditions, is highly stimulating, but motorists tend to experience a degree of 'overarousal' that they commonly experience as 'stressful'. Cyclists on the other hand are the most likely to experience their commute as 'exciting'. At the other end of the arousal spectrum public transport users experience a degree of 'underarousal' that leads them to more frequently describe their commute as 'boring'; while those on foot are most likely to report that they find their commute 'relaxing' (Figure 2) (Gatersleben & Uzzell, 2007).

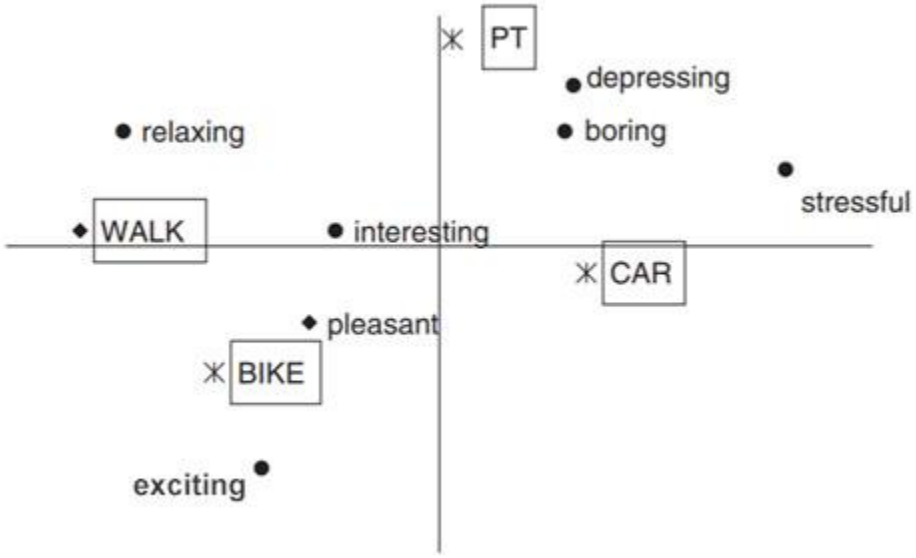

Figure 2. Affective appraisals of the daily commute (Source: Gatersleben, 2007)

Research suggests that high levels of cyclist commute satisfaction are the result of a combination of four key factors:

- A high degree of commuting control and 'arrival-time reliability';
- Enjoyable levels of sensory stimulation;
- The 'feel better' effects of moderate intensity exercise; and
- Greater opportunities for social interaction.

In this paper, I explore the science of cyclist mode satisfaction, and then apply it to the experiences of 23 e-cyclists who participated in interviews for the Electric City research project at the University of Auckland. I explore how their experiences are consistent with or might vary from existing understandings of why cyclists find cycle commuting enjoyable. I also explore what this means for transport planning and promotion.

All the cyclists in this study use an electric bicycle. In most ways the experience of riding an e-bike is similar to the experience of using a pushbike. Or it would be more accurate to say that in general e-biking provides a new combination of existing elements of cycling experienced by diverse groups of pushbike riders. Like road or sports cyclists, e-bikers tend to travel at slightly higher average speeds (Brian Casey Langford, Chen, & Cherry, 2015; Schepers, Fishman, den Hertog, Wolt, & Schwab, 2014), and to prioritise 'free-flow' infrastructure conditions like cycle highways (or roads if necessary) that enable them to sustain higher speeds without encountering too many obstacles. They also both ride more expensive bikes. In other ways e-bikers are more similar to traditional slower cyclists: they are more likely to ride European-style upright, step-thru bikes; more likely to be new to cycling; more likely to be women; more likely to favour low-moderate exercise intensity (Intelligent Energy Europe, 2010). And some aspects of e-biking experience are fairly unique: in particular the weight of the bikes that people are riding (avge 25-27 kg), which presents particular safety challenges and opportunities. The experience of effortless acceleration, the so called 'zoom' effect when starting off on an e-bike is also unique amongst e-cyclists, and is more akin to the experience of other motorized transport users.

Commuting control and arrival time reliability

Cyclists commonly report enjoying the sense of freedom and independence associated with using a flexible and relatively 'undisciplined' transport technology (Aldred, 2010; Jones, 2012). Cycling offers opportunities for creativity and 'polite deviance' in the ways that people use streetscapes (2005, 2012). Cyclists report enjoying the challenge of maintaining the 'ideal conditions' of continuous movement, playfully "carv(ing) a route out of both pedestrian and vehicle spaces" in pursuit of this goal (Spinney, 2011). The fact that cycling is a fairly nimble form of transport enables cyclists to maximise opportunities to maintain free-flow conditions, providing them with high levels of 'arrival time reliability' and as well as a heightened sense of personal 'self-efficacy', or what transport psychologists call high levels of perceived "commuting competence" (LaJeunesse & Rodríguez, 2012).

Cyclists in our Electric City research project reported that heightened commuting control, and high arrival time reliability in particular, is one of the key reasons why they use an ebike. This reliability was particularly valued by people who have especially tight time budgets because they have multiple responsibilities (ie. care and work responsibilities):

> "At the moment the North-Western motorway is such a dog that I can get more reliably home on the bike than I can in a car. The car varies between 45 minutes to 2 hours depending on what's happening with traffic, whereas a bike I know it'll be an hour. I will be home in an hour." (E-cyclist 9).

> "So the bike is not always quicker, it is often quicker but not always. But I justify it in that it is always exactly the same. You are plus or minus five minutes. So I can do it in 40 minutes or 45 minutes. …You could leave for work [in a car] and sometimes it is 15 minutes and sometimes it is 45 minutes, and if you are going to pick the kids up you can't be plus or minus an hour." (E-cyclist 5)

Consistent with research showing that commuting by car in congested conditions has a negative effect on mental health, the participants commonly cited one of the pleasures of biking as a sense relief from, as well as a sense of pride in, having found an alternative to the stresses of car commuting:

> "It is much more pleasant as an experience. …[D]riving a car in Auckland is a desperately stressful experience, even when it goes well and when it goes badly it is really dreadful." (E-cyclist 7)

> "I love my zoom. I wanna big sign at the back of my bike that goes Wha ha ha! As I go down Te Atatu Road and all the traffic's backed up. I think if you've ever heard of a woman going mental on the North Western, it would've been me. Cos, there's serious road rage. … So, now I don't have any road rage." (E-cyclist 19).

E-cyclists who had previously used a push-bike report that one of the reasons they like their e-bike is that it 'smoothes out' variations in their daily commuting conditions, such as wind or tiredness, that affect their arrival time reliability. Thus it appears that e-bikes enable cyclists to achieve even higher levels of perceived 'commuting control', one of the key contributors to high mode satisfaction amongst those who travel by bike.

Sensory activation and time outdoors

Amongst commuters, cyclists come to inhabit a unique sensory profile, characterized by high levels of 'multi-sensory' activation, arising simultaneously from both inside and outside the body: combining internal sensations of muscular effort with sensory input from the landscape. Cycling ethnographies document the "intensely sensual" of cycling: the ways that cyclists talk about "seeing, smelling, feeling, hearing and adapting devices, bodies and bikes in response to a changing environment.'' (Jungnickel & Aldred, 2014:245) Different types of urban cycling tend to facilitate different types of sensory engagement: with slower commuter cycling, typically on bikes that facilitate more upright posture tending to promote greater enjoyment of visual stimuli, while road cycling is characterized by "a kinaesthetic world of greater speed, exhilaration and reduced visibility." (2011; Spinney, 2007:35) Given the variety of conditions most cyclists experience within a journey, however, it is likely that they inhabit a mix of these so-called "sensescapes" (Spinney, 2007).

Cycling ethnographer Justin Spinney points out that it can go either way with sensory stimulation and cycling. If road conditions are too taxing, then cyclists start to suffer from 'sensory overload', however, in general cyclists report enjoying the way that cycle commuting makes their "sensory hairs stand on end"(Spinney, 2007). Mental health researchers point out that the combination of exercise-induced

alertness with high levels of sensory input from the environment also tends to reduce 'rumination'. Rumination, or the tendency for us to obsessively chew over our thoughts, is increasingly recognised as a significant cause of poor mental health (Papageorgiou & Wells, 2004). This exercise-induced reduction in rumination combined with time spent outdoors means that cyclists experience high levels of what is called "commuting attunement", or a state of relaxed observation and appreciation of one's surroundings (LaJeunesse & Rodríguez, 2012).

The e-cyclists in our study echoed previous findings about the role that spending time outdoors plays in cyclist mode satisfaction:

> "[Y]eah general wellbeing of being out in the sun and in the wind, and you know that kind of thing psychologically probably, it does feel good yeah absolutely on a nice day, it feels good." (E-cyclist 15)

> "I think it is good for you mentally to be out and whizzing around in the sunshine." (E-cyclist 6).

The participants talked a lot about how much more they noticed their surroundings when they switched from a car to an ebike:

> "I realised that when you are on your bike, even though the road you went on is just there and you are cycling just here, and it is maybe just 5 to 20 metres away from the road that you have driven on for years, actually you see things because you are on a bike and you are slower and you can stop and look to the side and not crash into someone. …So I saw these things, just like trees and greenery and hills and little reserves and little picnic tables and then I see plaques, little historic plaques." (E-cyclist 23).

Time spent outdoors was seen to lead to a positive loss of time:

> "Yeah. It's weird cos I'm not really in the nature but I feel like I'm in nature. I'm going past a tree and I'm just like, oh so pretty. Yeah, and you go past the water and oh so pretty. So, I feel like it's nice. It's a pleasant journey, I suppose. Yeah. I keep saying to my friend it takes me 40 minutes but it feels like a 10 minute bike ride." (E-cyclist 18)

The journey was also positioned as important time on one's own when you can enjoy your thoughts.

> "You're outside, nobody can bother you, you're just pedalling along thinking about stuff." (E-cyclist 9)

As another participant pointed out, the attention required to cycle means that it facilitates thinking without allowing for rumination:

> "With cycling you have time to think, but not dwell because you have to pay attention." (E-cyclist 16)

The ride as a break from busyness was another key theme amongst participants:

> What I like the most is that I actually get time out. I'm not very good at taking time and that 40 minutes riding there or riding home is just time to myself. As I said, I wasn't very good at taking time out so while I'm cycling it's not intense exercise but I'm getting fitness benefits but I'm also getting time where I'm not sitting around or rushing from one thing to the next. (E-cyclist 10)

The 'feel better' effects of exercise

There is no settled scientific consensus on why exercise has a 'feel better' effect, but we do know that moderate-intensity exercise is experienced as the most pleasurable by the majority of people, and is associated with stronger exercise motivation and more time spent exercising (Panteleimon Ekkekakis, 2003; P. Ekkekakis, Parfitt, & Petruzzello, 2011; Williams et al., 2008). Moderate exercise is also most optimal for both increasing mental alertness (Lambourne & Tomporowski, 2010) and improving mood (Panteleimon Ekkekakis, 2003; Paolucci, Loukov, Bowdish, & Heisz, 2018). Not all cyclists of course enjoy a moderate approach to exercise. We all have different arousal set points, so exercise intensity and enjoyment is at least partly a personal thing, but research shows that for most people cycling is most enjoyable at a fairly leisurely 60 rotations per minute (Agrícola et al., 2017). In their paper *Slow Down and Enjoy: The Effects of Cycling Cadence on Pleasure* Brazilian exercise scientist Pedro Agrícola and his fellow investigators point out that research showing that most people prefer a fairly slow cycling speed is consistent with findings from exercise psychology that people generally favour an exercise intensity that provides them with "higher levels of pleasure … and lower levels of perceived exertion" (Agrícola et al., 2017, p. 234). Daily opportunities for 'pleasant' levels of gentle exercise were positioned as a key part of cycling pleasure for the e-cyclists within our research:

> "I hated when I was having to do the drop offs, because the girls aren't locally at school, I was just hating it, I don't get to kind of move, you know. And I sit on my arse on the way, with everybody else whose sitting on their arses, in little air conditioned bubbles, I just hate it, it starts making me a bit grumpy, whereas you feel quite happy when you have a bit of a cycle to work. …Definitely I'm a person whose mood improves if I exercise." (E-cyclist 21)

> "It is a healthy level of exercise. When my joints allowed me to run I used to enjoy running because it meditative and there is that pleasant level of exercise. You can get that on a bike. Particularly an e-bike because the unpleasant levels of exercise involved in getting up a steep hill are removed." (E-cyclist 17).

In our research there was considerable variation in how much participants felt they were exerting themselves when they used their bikes. Overseas research shows e-bike users typically experience lower levels of physical activity per km compared to traditional cyclists, but they also tend to travel further and to spend more time cycling (Fyhri & Fearnley, 2015; B. C. Langford, Cherry, Yoon, Worley, & Smith, 2013). Thus studies show that e-bike use generally provides enough physical activity to meet moderate intensity exercise guidelines, even when users are employing the highest levels of electrical assistance

(Berntsen, Malnes, Langåker, & Bere, 2017; Gojanovic, Welker, Iglesias, Daucourt, & Gremion, 2011; Louis, Brisswalter, Morio, Barla, & Temprado, 2012; Peterman, Morris, Kram, & Byrnes, 2016; Simons, Van Es, & Hendriksen, 2009). Thus by providing cyclists with the ability to achieve 'moderate-intensity' exercise levels, e-bikes not only provide cyclists with access to the 'feel better' effects of exercise, but importantly, they provide them with the opportunity to control their level of exertion to keep it within the moderate intensity range that is experienced as most pleasurable by most people.

Opportunities for social interaction

A small number of existing studies point to a number of social gains associated with experiencing your city as a cyclist, including greater levels of social interaction and neighbourhood satisfaction (Gatersleben, Murtagh, & White, 2013; van den Berg, Sharmeen, & Weijs-Perrée, 2017). This is primarily because, as psychologists have pointed out, slower speeds and the 'open air' nature of active transport use enables people to make more eye contact and gather more information about social situations, both of which tend to increase social trust and feelings of familiarity with and affection for neighbourhoods and other people (Gatersleben et al., 2013). British cycling sociologist Rachel Aldred points out that cyclists are particularly likely to report valuing the way that their commute provides opportunities for 'flexible' social interaction that they could take or leave depending on their need for autonomy or interaction.

Like cyclists in other studies, social interaction was often positioned as one of the most valued things about cycle commuting:

> "Yeah me and my friend we had a lovely ride last week, we just meandered along and talked, and all these different people were out there, someone was walking a dog and someone was jogging, and you just say hello" (E-cyclist 3)

In general fellow cyclists were portrayed as a fairly social group:

> "You get to see a lot more, you know and you can go sort of, you can take shortcuts and you know so you get to sort of know the neighbourhood a lot better I think, you know you can greet people, you can say hi, I think the community is quite a friendly community, the cycling community". (E-cyclist 18)

> *'*Oh, I like chatting with the other bikers. My car's really old, it's got no radio. Silence. Fifty minutes of silence thinking in my own head, it's really not fun. I went past some guy yesterday and he had a high viz with "Dad" printed on the back. I was like "so cool". My fluorescent jacket is the pinkest thing you've ever seen with a flashing light in it at the back. And, he says, "You think *my* high viz is cool?!" You just don't get that in the car. Yeah, so I think that's probably one of my favourite things. (E-cyclist 19)

One participant echoed Aldred's findings about the ways that cycling provides 'flexible' opportunities for socialising, compared to other transport modes:

> "[I]n terms of commute I could either drive, take the train or cycle. Driving is horrendous, it makes me really anxious, no one is very friendly. The train is pretty good, you can read, but when people are, sometimes other people aren't having a good day and they're a bit in your face. …And [with cycling] it's actually quite social if you want it to be, and I often chat to people at the lights because I'm chatty, but you don't have to if you don't want to, and you can also go fast or not go fast depending on how you're feeling, like it's quite adjustable." (E-cyclist 16)

Discussion

The experience of cyclists within this project touches on a number of themes arising out of previous research, including the mood boosting combination of moderate exercise, time outdoors and positive absorption in surroundings provided by cycling. These descriptions are consistent with LaJeunesse and Rodriguez's (2012) findings that cyclists experience higher levels of 'commuting atunement', or a commuting experience that is both engaging and relaxing. This type of mental state is often described elsewhere as an experience of 'flow' (Csikszentmihalyi, 1990), or focused, relaxed absorption. The participants also talked about a number of other key themes raised by other researchers, including the ways that cycling is a "place-making activity" (Larsen, 2014) that gives people opportunities to explore and create a greater sense of ownership of their neighbourhood and their city. They also discussed the ways that cycling gives them greater control over their lives and their time, helping them to avoid the delays and unpredictability associated with congestion, and enabling them to meet their responsibilities at home and at work. Finally, consistent with Aldred's (2015) characterization of cycling as a travel mode that enables us to balance needs for social engagement and autonomy, the participants also talked a lot about the social joys of cycling, and the possibilities for flexible social interaction that they could take or leave: contrasting this to the perceived 'loneliness' of car travel and the 'in your face' social demands of public transport.

These findings support Gatersleben and Uzzell's (2007) call for more research on the possibilities for pleasure in everyday travel. They note that the dominance of car-based explorations of commuting has focused attention on 'commuting stress' at the expense of explorations of the travel pleasures inherent in other transport modes. This research also supports the call from urban designers Forsyth and Krizek (2011) for a new era of cycle infrastructure planning that moves beyond simple attention to safety and access to considerations of the "experience of the network" and the ways that we can protect and indeed enhance the pleasures inherent within everyday cycling. This could entail for instance "providing routes where cycling is uncomplicated enough to permit cyclists to spend time viewing the scenery. Or, it might involve focusing routes where the level of detail of the context is such that it can be easily perceived from the speed of a bicycle—less detail needed than for a pedestrian but more than for a motorist." (Forsyth & Krizek, 2011:535).

This new era of bike planning should also enhance the possibilities for socialising on a bike. Rachel Aldred (2015) in particular points to the ways that the model of the 'rational', 'purposeful' commuter in Western societies has stigmatised riding abreast and socialising while riding, despite the fact that, like the participants in our study, it is reported to be a key source of enjoyment for everyday cyclists. Larsen's

(2014) autoethnography comparing cycling in his native Copenhagen to cycling in London recounts the ways that high quality, wide, protected cycleways that demand “only basic fitness and partial attention” protect and enhance the social pleasures of cycling: “with a heterogeneous mix of fellow cyclists, both men and women, young and old. Couples and friends cycle abreast and parents cycle with their children. Others are on the phone or smoking a fag. Many listen to music.” Given the increasing contribution that loneliness and isolation are making to levels of physical and psychological illness within Western societies, this research reinforces the important role that active transport can play in improving levels of social interaction and neighbourhood satisfaction.

Conclusion

Promoting the health benefits of cycling requires a move beyond seeing cycling as a ‘virtue’ or a healthy habit, towards a keener appreciation of the physical, psychological and social pleasures of cycling and the role that it can play in improving quality of life in our cities. While an emerging body of research shows that active transport users, and cyclists in particular, are the happiest commuters, the reasons for this satisfaction remain understudied. In this paper I have argued for the value of bringing together existing research on aspects of cycling experience (cycling ethnographies, and research on exercise experience) with new interview data from our Electric City e-bike research programme in order to deepen our understanding of cyclist mode satisfaction. I have argued that research points to four key components of high commute satisfaction amongst cyclists: 1) A high degree of commuting control and ‘arrival-time reliability’; 2) Enjoyable levels of sensory stimulation; 3) The ‘feel better’ effects of moderate intensity exercise; and 4) Greater opportunities for social interaction. I have also argued that the evidence suggests that e-cycling, in particular, may further heighten, as well as ‘democratise’, specific components of this satisfaction: most markedly through further improving commuting control, and secondly through giving people greater control over cycling intensity, enabling them to keep exercise intensity within a ‘pleasurable’ zone.

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Declaration of competing interests

The author declares no competing financial interests.