



Gender equity in health and the influence of intrapersonal factors on adolescent girls' decisions to bicycle to school

Jillian Frater*, Simon Kingham

Department of Geography, University of Canterbury, Private Bag 4800, Christchurch 8140, New Zealand



ARTICLE INFO

Keywords:

Adolescent girls
Bicycle
Health equity
Intrapersonal factors
Gender

ABSTRACT

Decreasing levels of physical activity and increasing prevalence of chronic health conditions including obesity, diabetes and cardiovascular disease are global problems. Bicycling to school is a way to increase physical activity and reduce the prevalence of these conditions. In locations such as Christchurch, New Zealand, where adolescent girls cycle to school far less than boys, there is potential for a lack of gender equity in health. Focus groups were held with adolescent girls at three Christchurch high schools in 2012 and 2013. Separate focus groups were held for year 9/10 (13–14 years-old) and year 13 (16–17 years-old) girls. Girls' decisions to cycle to school were found to be affected by injunctive and descriptive cycling norms in relation to both friends and parents, in addition to concerns about image, being social, being feminine and shunning physical activity, gender attribution, cycling confidence and personal security concerns. To achieve gender equity in health and improve the health and the opportunities available to girls to independently engage in social, educational, vocational and sporting activities, it is necessary to take into account the intrapersonal factors that affect girls' decisions to cycle to school.

1. Introduction

In many countries, a goal of public policy is to achieve gender equity in health. A study for the World Health Organisation on inequalities in young people's health found one gender could not be said to be healthier than the other. It, however, concluded different health issues concern males and females as they have different behaviours, health outcomes and settings for health (Currie et al., 2008). Increasing people's physical activity is beneficial to their health, in particular in managing obesity, diabetes and cardiovascular disease (Gutin and Manos, 1993; Hamer and Chida, 2008; Sigal et al., 2006).

Cycling is a way to increase people's physical activity (Oja et al., 2011). In New Zealand, like many low cycling countries, the cycling behaviour of males and females differs with more males cycling than females (Statistics New Zealand, 2014). This difference is very pronounced for adolescents, as many adolescent girls give up cycling when they start secondary school (Bonham and Wilson, 2012). As a result adolescent boys are seven to nine times more likely to cycle to school than girls (Frater, 2015; Horspool, 2006). As the journey to school is an important source of physical activity (Cooper et al., 2003), it is therefore useful to consider the factors that influence girl's decisions to bicycle to school.

This paper uses focus group based research to investigate the

intrapersonal factors, as contained in the ecological model of active transport of Sallis et al. (2006), that affect adolescent girls' decisions to cycle to school in Christchurch, New Zealand. A focus on individual factors is consistent with findings of Emond et al. (2009) who in explaining gender difference in bicycling behaviour concluded that while the social and physical environment played an important part in determining bicycle use for men and women, individual gender-specific influences were the strongest determinants. We recognise that biological sex and gender are defined by some researchers to be social productions (Bonham et al., 2015). In this context, we acknowledge that in this research we are participating in 'gendering'— i.e. constituting 'girls' and 'boys'.

2. Literature review

Cycling rates for men and women around the world differ based to some degree on the overall cycling rates for each locality. In countries with low cycling rates generally males cycle more than females. In New Zealand, the percentage of people that cycle to work is 2.8, 3% for men and 1.3% for women, with the greatest gender difference occurring for those aged 15–19 years - 5.9% for males and 2% for females (Statistics New Zealand, 2014). In the 2013 Census, 69% of all people cycling to work in the greater Christchurch area were men and 31% women

* Corresponding author.

E-mail address: jillian.frater@lincoln.ac.nz (J. Frater).

(Statistics New Zealand, 2015b). These rates are mirrored in the rates of children cycling to school in low cycling countries e.g. Australia (Leslie et al., 2010; Timperio et al., 2006) and the UK (Panter et al., 2009). In New Zealand, 6% of 13–17 year-olds cycle (as determined in the NZ Household Travel Survey); 58% of males of this age rode a bicycle in the last year, and 44% of females; and 11% of males had ridden in the last 5–9 days and 5% of females (Ministry of Transport, 2015). In countries where cycling rates are high, the percentage of cycling trips undertaken by women is generally higher than for men. In Denmark, 16% of the population cycle (Garrard, 2003), 17% women and 15% men. In the Netherlands, 28% of people cycle (Pucher and Buehler, 2008), 31% women and 26% men (Garrard, 2003).

The journey to school can be an important source of physical activity for children (Cooper et al., 2003) and walking and cycling to school or work are associated with health benefits (Oja et al., 1998; Unwin, 1995). Active travel to school is also associated with increased independent mobility and opportunities to independently engage in a wide range of social, educational, vocational and sporting activities (de Hartog et al., 2011; Hanson, 2010; Law, 1999; Williams et al., 2009). Therefore, increasing the proportion of children walking and cycling to school has many potential benefits.

Distance, however, severely limits how far people will walk, and to a lesser degree, how far they cycle. The mean distance people in the United States (US) will walk is 1.1 km (Yang and Diez-Roux, 2012) and given the similarities in travel preferences with the US, this is likely to be similar in New Zealand. Furthermore, the mean distance children aged 13–17 years cycle to school in New Zealand is 2.4 km (Ministry of Transport, 2015). Therefore, given the average distance travelled to a state high school in Christchurch is 6.38 km (median 3.71 km) (Devonport, 2017), and walking is severely limited by distance, cycling is an option for some journeys that people perceive as too far to walk.

Since the 1960s, however, greater proportions of children in many countries in the developed world including New Zealand have travelled to school by car and rates of Active Travel to School (ATS) have decreased. In the US rates of ATS decreased from 47.7% in 1969 to 12.7% in 2009 for children aged 5–18 years old (McDonald et al., 2011). Similarly, in New Zealand, for children aged 13–17 years, the number of journeys per person per year who cycled to school decreased from 28 in 1989/90 to five in 2010–2014 and the number driven to school increased from 30 in 1989/90 to 48 in 2005, with the sharpest increase occurring between 1989/90 and 1997/98 (Ministry of Transport, 2015). Similar patterns exist in Australia (van der Ploeg et al., 2008), Canada (Buliung et al., 2009) and the UK (Black et al., 2001).

For both sexes, adolescence may influence cycling rates as it is a time when identity, self-esteem, peer relationships (Aldous, 1983), image (Bukatko, 2008) and the social implications of behaviours (Erikson and Erikson, 1982) are very important. Many adolescent girls give up cycling when they begin secondary school (Bonham and Wilson, 2012). This is partly due to increased demands on their time with homework and afterschool activities, increased distance from school, the need to carry more to school and desires to maintain social networks (Bonham and Wilson, 2012). Individual factors also play an important role in determining reasons for cycling (Emond et al., 2009), thus it is appropriate for the intrapersonal factors associated with this behaviour to be considered. These include image, attitudes, norms and control factors.

Much existing research shows body image and clothing contribute to the decisions of females to cycle. These factors have been shown to influence adult women's cycling (Green et al., 2012; Steinbach et al., 2011) with some women reporting feeling self-conscious in cycle clothing (and fear attracting unwanted harassment from men when wearing cycling clothing) (Garrard et al., 2006). Such concerns are also likely to extend to adolescent girls, particularly older girls. Girls in early adolescence have been shown to have lower self-esteem than boys and are more conscious of body image (Polce-Lynch et al., 2001; Rankin et al., 2004). Older girls are also likely to be less satisfied with their

body image than younger girls and are therefore more likely to report negative health (Meland et al., 2007). Other researchers confirm such views with respect to cycling as they conclude high school children are more likely to be concerned about their image and think cycling is uncool compared to children at primary school (Carver et al., 2013; Horspool, 2006).

The way cycling is portrayed in the media affects the image adolescent girls associate with cycling and other forms of transport, such as the car. This is important as girls in late childhood and early adolescence are strongly influenced by media (Polce-Lynch et al., 2001). Particularly in countries where car culture dominates, such as New Zealand, television and movies influence adolescent's perceptions of car use by emphasising youth cultures centred around cars (Stokes and Hallett, 1992). In keeping with social cognitive theory (Bandura, 1969), Behm-Morawitz and Mastro (2008) suggest the more consumers identify with particular movie characters, the more likely they are to adopt the attitudes, beliefs and behaviours shown in these movies. Therefore, it is likely adolescents, and girls in particular, will adopt these attitudes. Consequently, in countries such as the US and New Zealand where cycling rates are low, it is more likely adolescent girls will adopt attitudes related to car culture and not those associated with bicycle culture.

Linked to concerns about body image is a reduction in physical activity by adolescent girls and a desire not to be physical (Slater and Tiggemann, 2011). The relationship between physical activities and maturity for women is well documented by Rees et al. (2006) who conclude participating in physical activities is not identified as 'being a woman' and considered 'babyish'. Similarly, (Allender et al., 2006, p. 831) found female adolescents often considered cycling to be a "childish activity". Such ideas have existed for many years, with reports of similar comments by women in the late nineteenth century (Hanson, 2010).

Parental behaviour towards girls, girls' risk assessment, confidence, knowledge and skills also affect girls' decisions to cycle to school. Traditionally, parents have considered girls to be more vulnerable and not allowed them to be as independent as boys (McMillan et al., 2006; Shaw et al., 2013). Women have also been shown to be more risk averse and have greater concerns regarding cycling in traffic and personal security (Dickinson et al., 2003; Emond et al., 2009; Kingham et al., 2011; Krizek et al., 2004), including concerns related to aggression from motorists, and inhaling fumes (Garrard et al., 2006). In addition, they also have a lack of bicycle maintenance confidence, cycling ability and cycle skills and knowledge of local cycle routes (Beecham and Wood, 2014; Garrard et al., 2006; Heesch et al., 2012; Horspool, 2006).

Attitudes to cycling and the influence of norms are also relevant in decisions to cycle. This is particularly true for adolescents as the social influences of one's peer group become increasingly important to motivations, decisions and behaviours (Bandura, 1969). Norms are also particularly relevant for adolescent girls as they have greater social engagement (Rankin et al., 2004) and interpersonal affiliation (Leaper and Friedman, 2007) than boys. Previous research on adolescent cycling in New Zealand has shown girls reported less positive attitudes to cycling than boys, and were less influenced by subjective norms (friends and parents) and descriptive norms (friends) in favour of cycling (Frater et al., 2017). Such associations are likely in low cycling countries, like New Zealand where less women and girls cycle, cultural norms adversely affect the percentage of women and girls cycling (Aldred et al., 2015).

The identification of gendered patterns of mobility is however not without its issues. Some researchers identify gendered patterns of mobility as an outcome of natural differences (e.g. concerns about road safety) (Pucher et al., 2011) and others, that they are a result of socialisation into specific roles (Emond et al., 2009). Yet another view is that 'women' and 'men' are political, rather than natural, categories (Baachi, 1996) and that identification of the mobility characteristics of 'girls' and 'boys', further reinforces this differentiation (Bonham et al.,

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