



The introduction of a single-use carrier bag charge in Wales: Attitude change and behavioural spillover effects



Wouter Poortinga^{a, b, *}, Lorraine Whitmarsh^b, Christine Suffolk^a

^a Welsh School of Architecture, Cardiff University, Bute Building, King Edward VII Avenue, Cardiff, Wales CF10 3NB, UK

^b School of Psychology, Cardiff University, Tower Building, 70 Park Place, Cardiff CF10 3AT, UK

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ABSTRACT

Wales is the first country in the United Kingdom to have introduced a charge for single-use carrier bags. A 2 × 2 quasi-experimental field study was set up to evaluate the effectiveness and further attitudinal and behavioural impacts of the charge. Independent nationally representative quota samples were interviewed before and after the introduction of the carrier bag charge in Wales and at the same times in England ($n = 500$ each). England, where no carrier bag charge was introduced, served as the comparator for the study. The study found increases in own bag use in both countries. However, the increase was much greater in Wales than in England. The study also found evidence for the policy becoming more popular after its implementation in Wales. While support for the carrier bag charge was already high before its introduction, the Welsh population became even more supportive afterwards. Although no support was found for positive behavioural spillover, the study found changes in self-reported environmental identity that could produce positive spillover effects in the longer term. The theoretical and policy implications of the findings are discussed.

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1. Introduction

1.1. Background

Wales is the first country in the United Kingdom to have introduced a charge for single-use carrier bags. From the 1st of October 2011 onwards, shoppers in Wales have to pay a compulsory five pence for each single-use carrier bag at point of sale.¹ The charge was introduced to prevent littering and to reduce the amount of waste going to landfill (Welsh Assembly Government, 2010). A quasi-experimental field study was set up to evaluate the effectiveness of the charge to reduce carrier bag use amongst the general public, and to explore further attitudinal and behavioural responses to the charge. More specifically, the introduction of the carrier bag charge in Wales was used as a natural experiment to examine whether environmental policies may become more popular after their introduction and lead to *behaviour spillover*, i.e.,

promote pro-environmental behaviours other than the one(s) directly targeted by the policy.

1.2. The effectiveness of policies to reduce single-use carrier bag use

Over the past decade a remarkable shift in the international norms associated with disposable carrier bags has taken place. Single-use carrier bags – plastic ones in particular – are increasingly seen as an environmental hazard threatening human and animal welfare, rather than as a benign modern convenience. Many national and local governments have therefore either banned or put restrictions on the sale or use of disposable plastic bags (Clapp & Swanston, 2009). The success of these countries to reduce plastic bag use among the general public has led to other countries, states and local communities following suit with comparable measures (e.g., Convery, McDonnell, & Ferreira, 2007).

While there have been many initiatives to reduce single-use carrier bags, very few of them have been evaluated. The available evidence suggests that a tax or a charge on disposable carrier bags can be highly effective.² Research by Convery et al. (2007) shows that plastic bag tax introduced in the Republic of Ireland in 2002

* Corresponding author. Welsh School of Architecture, Cardiff University, Bute Building, King Edward VII Avenue, Cardiff, Wales CF10 3NB, UK. Tel.: +44 (0)29 2087 4755; fax: +44 (0)20 2097 4623.

E-mail address: PoortingaW@cardiff.ac.uk (W. Poortinga).

¹ Single-use carrier bags are designed to hold purchases for a single journey to take them home. This includes bags made of any material (e.g., plastic, paper, or plant-based materials such as starch) which are generally not suitable for multiple usage.

² The difference between a tax and a charge is that the revenues of a tax go to the government while the revenues of a charge go to the retailer. In Wales, retailers are suggested to donate the proceeds to a charity of choice.

(the 'plastax') reduced plastic bag use by more than 90% and raised revenues in the order of €12–14 million for the Environment Fund. However, this conclusion was based on evidence from multiple sources, not on a systematic evaluation of the policy. A national plastic bag charge introduced in China in 2008 led to a 49% reduction in the use of new plastic bags (He, 2010). In this study, independent samples of shoppers were interviewed before and after the implementation of the policy. However, without a comparable control or comparator group, the research was not able to separate the effects of the policy from more general trends in plastic bag use.

There are different ways in which the effectiveness of a tax or a charge on carrier bags can be understood. Economists see a carrier bag tax or charge as a typical market-based instrument that internalises the costs of environmental pollution. The effectiveness is therefore based on the pricing of the external costs of pollution that were not previously part of the consumers' decision to use disposable carrier bags. The functioning of market-based instruments is well supported by economic theory (Tietenberg, Button, & Nijkamp, 1999). According to economic theory, 'emissions' (i.e. number of bags used) will be reduced to the point where the marginal benefits of internalisation equal the marginal costs of abatement (Convery et al., 2007). However, while the pricing certainly forms part of the explanation, a singular economic focus may ignore important psychological processes that could contribute to the success of a tax or charge to change behaviour.

The functioning of the carrier bag charge can also be understood from a 'habit discontinuity' perspective (Verplanken, Walker, Davis, & Jurasek, 2008). The use of carrier bags may – like many other waste-related behaviours – be strongly habitual (i.e. automatic, frequent and 'cued' by stable contexts; Verplanken, Aarts, van Knippenberg, & Moonen, 1998). The introduction of the charge can be seen as a 'context change' after which bag use needs to be renegotiated. While previously consumers may have 'unconsciously' grabbed a single-use carrier bag at the cashier till, a carrier bag charge or tax forces them to make a conscious decision as to whether they want to use one or not. People are then prompted to adapt their behaviour to either avoid the charge, as argued by economic theory, or to bring behaviour in line with their values, as posited by the self-activation hypothesis (Verplanken et al., 2008). The old wasteful habit then may (or may not) be replaced by the new behaviour of bringing a re-usable bag to the shops, which in the longer term may become a habit in its own.

1.3. Attitudinal responses to environmental policies

In addition to the intended changes in the targeted behaviours, environmental policies appear to elicit a number of other less well understood attitudinal and behavioural responses. Despite Irish consumers being somewhat resistant to the plastic bag charge prior to its introduction (Drury Research, 2000), Convery et al. (2007) reported that they became more positive about the policy after its implementation. Convery et al. (2007) even label the policy as "the most popular tax in Europe". Similar positive attitudinal changes were observed for other environmental and behavioural change policies. Smokers as well as non-smokers have been found to be more supportive of a smoking ban after the benefits became apparent (Borland, Owen, Hill, & Chapman, 1990; Owen, Borland, & Hill, 1991; Seo, Macy, Torabi, & Middlestadt, 2011); and a number of congestion charges have become more popular after they came into

force (Schuitema, Steg, & Forward, 2010; Transport for London, 2004).³

Attitude change brought about by behaviour change policies can be explained by well-established social psychological consistency theories, such as *cognitive dissonance* (Festinger, 1957) and *self-perception theory* (Bem, 1967). Cognitive dissonance theory posits that people have a motivational drive to reduce discrepancies between attitudes and behaviour, as such discrepancies produce feelings of discomfort. This can be done by either changing attitudes or behaviours. According to self-perception theory, people infer their own attitudes from observing their own behaviour. Attitude change may therefore occur if policies are successful in changing behaviour.

An alternative explanation for the positive attitudinal changes is that parts of the public have unrealistic expectations regarding the consequences of the proposed policies. These views may then be adjusted after people have experienced the benefits of a policy and/or have been able to adapt to the policy without much difficulty (Ölander & Thøgersen, 1995).

1.4. Behavioural responses to environmental policies: spillover effects

A possible side effect of cognitive dissonance and self-perception processes is that the policies and their accompanying attitude and behaviour changes may lead to further behavioural responses. The spread of effects from a targeted behaviour to other associated behaviours is known as *behavioural spillover* (Thøgersen, 2004; Thøgersen & Crompton, 2009) or *response generalisation* (Ludwig, 2002; Ludwig & Geller, 1997). According to Bem's self-perception theory (1967) people do not only infer their attitudes from their behaviours; they also use their behaviours as 'cues to their internal dispositions'. This means that engagement in pro-environmental behaviour may encourage changes in people's values and identity, which then may lead to further behavioural changes in line with the revised identity (Whitmarsh & O'Neill, 2010). If people stop using single-use carrier bags and start bringing their own reusable bag to the shops, they may see themselves as being more waste conscious and thus are more likely to make other waste-conscious decisions.

Response generalisation theory argues that reinforcement effects may spread to other functionally similar behaviours (Ludwig, 2002). The use of behavioural spillover processes to promote environmentally sustainable lifestyles change has gained some traction in policy circles. It is hoped that certain 'catalytic' or 'wedge' behaviours may serve as entry points in helping people to make additional changes (Defra, 2008). However, while behavioural spillover or response generalisation has been observed for safety behaviours (Ludwig & Geller, 1997), there is little empirical evidence of spillover effects in the environmental domain. Most of the evidence in the environmental domain is still predominantly correlational (Barr, Gilg, & Ford, 2005; Poortinga, Spence, Demski, & Pidgeon, 2012; Thøgersen & Noblet, 2012; Whitmarsh & O'Neill, 2010). While response generalisation may have contributed to the covariance between the different (types of) environmental behaviour, a causal relationship can only be established via (field) experimental research.

It also has to be considered that changes in a target behaviour might not necessarily lead to additional attitude and other behavioural change. People need to change their behaviour voluntarily and for the 'right' reasons. If behaviour change is (perceived to be) imposed or associated with external contingencies, the behaviour could become extrinsically rather than intrinsically motivated (Deci & Ryan, 1985). This is then unlikely to produce changes in identity and other associated behaviours. Also, evidence is emerging that

³ Congestion pricing or congestion charges are a system charging motorised vehicles for entering a particular zone in periods of high demand to reduce traffic congestion.

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