



# Moderating effects of pro-environmental self-identity on pro-environmental intentions and behaviour: A multi-behaviour study



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## ABSTRACT

Self-identity is considered as a useful additional predictor in the theory of planned behaviour (TPB). However, previous research generally assessed the impact of pro-environmental self-identity in relation to single behaviours and no studies considered its potential role in moderating the impact of other predictors on behaviour. The present research used a within-persons approach to examine effects across behaviours and a longitudinal design to assess the moderating role of self-identity in the prediction of intentions and behaviours, controlling for past behaviour. Participants ( $N = 240$ ) completed Time 1 questionnaires measuring TPB constructs in relation to five different pro-environmental behaviours. Two weeks later, participants ( $N = 220$ ) responded to a questionnaire assessing self-reports of these behaviours during the intervening two-week period. Across pro-environmental behaviours the findings showed that pro-environmental self-identity significantly moderated the impact of perceived behavioural control on intentions and the effect of past behaviour on both intentions and behaviours.

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## 1. Introduction

During the last half-century, the increase in industrial production, resource extraction and private consumption, has exerted an amplified deleterious impact on the environment (e.g., Thøgersen, 2009). This is reflected in increased public attention to and awareness of the issue of the sustainability of the natural environment (e.g., Hynes & Wilson, 2016). This has become one of the major concerns of the 21st century; awareness of the need to adopt pro-environmental behaviour for a sustainable future is now widespread (e.g., Barr, Shaw, & Gilg, 2011), particularly in relation to the contribution of individual and household behaviours (Klöckner, 2013). In fact, research has indicated that individual citizens can help environmental change through socially responsible behaviours, such as recycling (Environmental Protection Agency, 2012).

## 2. Using the theory of planned behaviour for explaining pro-environmental behaviours

The theory of planned behaviour (TPB; Ajzen, 1991) is a well-known theoretical extension of the theory of reasoned action (TRA; Ajzen & Fishbein, 1980) that has contributed to the explanation of the factors involved in various social behaviours, including pro-environmental behaviour. Briefly, the model asserts that attitudes, subjective norm and perceived behavioural control (PBC) are involved in the decision-making processes that determine intention formation and behavioural enactment.

The TPB model has demonstrated potent predictive power for several pro-environmental behaviours (e.g., Gatersleben, Murtagh, & Abrahamse, 2014; Sparks, Hinds, Curnock, & Pavey, 2014; Whitmarsh & O'Neill, 2010). Furthermore, researchers have shown that intentions can contribute to the prediction of environment-related behaviours. For example, Bamberg and Möser's (2007) meta-analysis indicated that, on average, intentions accounted for 27% of the variance in pro-environmental behaviours.

A criticism of the above TPB research is that most studies have employed cross-sectional designs, which represent a significant limitation because such designs are likely to inflate the

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correspondence between intention and behaviour (Hausenblas, Downs, Giacobbi, Tuccitto, & Cook, 2008). Therefore, the present work used a longitudinal study, within a multilevel design, which separately measured intention, attitude, subjective norms, PBC, past behaviour and future behaviour for several pro-environmental behaviours. Furthermore, we considered the role of pro-environmental self-identity as an additional predictor and moderator of these relationships within the TPB.

A further weakness of previous research has been the use of between-subject analyses to assess these effects even though the relationships of interest are within an individual. To overcome this problem we used a within-person approach to examine effects across several pro-environmental behaviours simultaneously. Analysing such data using multilevel modelling with random slopes allowed us to examine the relationships within individuals; this could be argued to be a more appropriate test of the relationships between TPB variables and behaviour (see Conner et al., 2016). It should be noted that pro-environmental self-identity was examined as a person-level variable in these analyses.

### 2.1. Self-identity as an additional variable

The literature on self-identity within the TRA and TPB (e.g., Dean, Raats, & Shepherd, 2012; Sparks & Shepherd, 1992) originated from the findings that a significant amount of variance in intentions and behaviours is not explained by TPB variables. Consequently, social researchers examined if individuals act in ways consistent with their sense of self and whether this might explain additional variance after controlling for TPB variables.

Self-identity reflects the enduring characteristics of an individual's self-perception (Sparks, 2000) and its inclusion within the TPB was originally inspired by identity theory (Stryker, 1987). Identity theory suggests that self-identity is composed of a collection of roles fulfilled by the person, which in turn induces an habitual action for supporting the validation of the self-concept (Stets & Burke, 2000). In this way, self-identity attempts to establish consistency between attitudes and actions (Christensen, Rothberger, Wood, & Matz, 2004), inducing specific intentions. Therefore, the more relevant an identity is, the more it elicits identity-congruent behaviours (Laverie & Arnett, 2000).

Different studies have confirmed that self-identity is an important additional factor within the TPB for predicting both intentions and behaviours (e.g., Paquin & Keating, 2017), including studies that controlled for past behaviour (e.g., Carfora, Caso, & Conner, 2017a; Caso, Carfora, & Conner, 2016). For example, Rise, Sheeran, and Hukkelberg (2010) in a meta analysis reported that self-identity explained a significant amount of additional variance in intentions controlling for past behaviour.

#### 2.1.1. The role of self-identity in relation to pro-environmental behaviour

Studies within environmental psychology have revealed that individuals' sense of identity can predict intentions and action for pro-environmental behaviours (e.g., Sparks, Shepherd, & Frewer, 1995; Whitmarsh & O'Neill, 2010). In the literature, pro-environmental self-identity is conceived and measured in different ways, some based on theories of the self-concept and interpersonal relationships, others grounded in theories of identity (for details, see Walton & Jones, 2017).

Specifically, in the present research pro-environmental identity is conceptualized as a durable sense of oneself as interdependent with the natural world (Clayton, 2012), and it refers to the extent to which a person perceives that environmentalism is an important part of who s/he is (Stets & Biga, 2003). To illustrate, self-identity as a recycler can influence intentions related to recycling behaviour

(Manetti, Pierro, & Livi, 2004) and self-identity as "green" consumers can predict intention to purchase organic foods (Sparks & Shepherd, 1992). Similarly, an energy-saving identity can explain intentions to conserve energy (Van der Werff, Steg, & Keizer, 2011).

Moreover, self-identity directly explains pro-environmental behaviours (e.g., Devine-Wright, 2009). The effect of self-identity on intentions and related pro-environmental behaviour was confirmed in a study on recycling behaviour (Nigbur, Lyons, & Uzzell, 2010) and in research concerning a range of pro-environmental behaviours (such as waste reduction and eco-shopping; Whitmarsh & O'Neill, 2010). More recently, Mancha and Yoder (2015) indicated that this construct predicted intention to protect the environment; Wang (2016) found that it was positively related to individual consumer behaviour and civic behaviour pertaining to green food and beverage choices. In summary, pro-environmental self-identity may encourage individuals to form pro-environmental intentions and to engage in pro-environmental actions.

#### 2.1.2. Self-identity as a moderator of TPB relationships

One criticism of the majority of studies on pro-environmental behaviours that have considered self-identity is their failure to control for the effects of past behaviour (e.g., Gatersleben et al., 2014). It is necessary to consider the independent effect of past behaviour, which is typically demonstrated to be the strongest predictor of future behaviour, explaining variance over and above the impacts of the TPB variables (see Ajzen, 1991; Conner & Armitage, 1998). Nevertheless, some studies have shown significant effects of self-identity even when controlling for past behaviour (e.g., Carfora, Caso, & Conner, 2016a).

A further criticism of many previous studies of self-identity within the context of the TPB is the failure to consider moderation effects. Thus, in the current research we assess the extent to which pro-environmental self-identity moderates the relationships between variables. Although self-identity might moderate any of the relationships, previous research that has looked at moderation effects has generally explored interaction effects with three variables.

First, interactions between self-identity and past behaviour on either intentions or behaviour have been explored. Identity theory (Stryker, 1987) would suggest that repetition of a behaviour leads to perceptions of the behaviour as an important part of the self-concept. This would suggest a positive interaction between self-identity and past behaviour in predicting intentions and behaviour. However, the evidence in this regard is mixed. Charng, Piliavin, and Callero (1988) reported such a positive interaction regarding intentions to donate blood donation. However, Åstrøm and Rise (2001) failed to find a significant interaction for predicting healthy eating intentions and Terry, Hogg, and White (1999) did not find a significant interaction for recycling behaviour. Other studies (Conner & McMillan, 1999; Dean et al., 2012; Smith et al., 2007) have found significant negative interactions between past behaviour and self-identity for explaining intentions. No studies have reported tests of the interaction between self-identity and past behaviour on subsequent behaviour.

Second, interactions between self-identity and perceived behavioural control on intentions have been explored in a couple of studies. For example, Terry et al. (1999) reported that PBC was more strongly related to intentions when group identification about household recycling was low compared to high (i.e., a negative interaction). Similar relationships between PBC and intentions were reported by Cheng and Chu (2014). No studies have reported tests of the interaction between self-identity and PBC on subsequent behaviour.

Third, the interaction between intentions and self-identity in

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