



Standard deviation? The role of perceived behavioural control in procedural violations



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ABSTRACT

Procedural violations – behaviours that are not intended to cause harm but that deviate from established protocols or guidelines – are commonly understood from the perspective of social psychological models, including the theory of planned behaviour (TPB). The current study aims to examine the relationship between one aspect of the theory – perceived behavioural control (PBC) – and anaesthetists' intentions to commit violations in the course of their work. 629 anaesthetists in the United Kingdom responded to a questionnaire including three hypothetical scenarios, each of which included a violation. Factor analysis of the questionnaire data found the presence of a two-factor structure (reflecting perceived control-ability and perceived difficulty) accounting for the relationship between the control beliefs comprising PBC and intention to commit each violation. A regression analysis found that, in two of the scenarios, some control beliefs had a curvilinear relationship; behavioural intention was strongest when these beliefs are rated as “neutral” (not having a strong facilitative or inhibitive effect on behaviour). The study findings suggest that PBC has a complex relationship with behavioural intention that should be accounted for when applying the TPB to violations.

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1. Introduction

1.1. Background

Procedural violations (behaviours that deviate from established rules or protocols) remain a challenge for the maintenance of safe work systems. Their occurrence has been noted in a range of high-risk industries, including amongst others aviation (English and Branaghan, 2012; Wiggins et al., 2012), rail transport (Lawton, 1998), pharmaceutical manufacture (Nyssen and Côte, 2010) and medicines administration (Alper et al., 2012). Violations are rarely committed with the intention of causing harm; however, they can lead to an erosion of safety margins, thus indirectly increasing the risk of harm occurring (Reason et al., 1998; Amalberti, 2001). It is therefore important to understand the reasons why violations occur and how they might be either reduced or accommodated within a work system (Alper and Karsh, 2009; Catchpole, 2013).

From a psychological perspective, violations are often seen as a product of social or motivational factors, such as a trade-off between

the perceived benefits and risks of behaving in a particular manner (e.g. Reason et al., 1990; Battmann and Klumb, 1993). One paradigm that has been used to capture such influences on rule-related behaviour, and subsequently to suggest interventions for dealing with violations, is the theory of planned behaviour (TPB; Ajzen, 1988, Ajzen (1991)). The TPB proposes that one's intention to carry out a particular action is a product of three main factors:

- Attitude towards the behaviour (the individual's evaluation of the positive and negative aspects of performing the behaviour);
- Subjective norm (the individual's perception of social pressure to perform or not perform the behaviour);
- Perceived behavioural control (the individual's perception of control over the behaviour, given both past experience and anticipation of current obstacles).

Parker et al. (1992) and Paris and Van Den Broucke (2008) have found that TPB variables account for approximately 25–50% of the variance in self-reported intention to commit a range of driving violations, while Warner and Åberg (2006) found that TPB variables predicted both intention to speed and actual speeding behaviour. In addition to these findings for driving violations, Beatty and Beatty (2004) found that TPB variables accounted for a range of procedural violations by anaesthetists.

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The focus of the current paper is the perceived behavioural control (PBC) component of TPB. There has been some debate in the literature about the nature of PBC and its relationship with behavioural intention (e.g. Armitage and Conner, 2001; Dixon, 2006; Rodgers et al., 2008). As explained in the remainder of this section, two particular issues within this debate – the multidimensionality of PBC and the linearity of its relationship with behaviour – have a bearing on how violations are understood in the context of TPB.

1.2. Dimensionality of PBC

Trafimow et al. (2002) present evidence to support the view that PBC is a multidimensional rather than unidimensional construct. According to Trafimow et al., PBC includes perceived control (the extent to which a behaviour is under voluntary control) and perceived difficulty (the extent to which a behaviour is perceived to be difficult). They found that each of these could be manipulated independently of each other, and that the control beliefs that were part of a PBC measure included both types. Kraft et al. (2005) and Rodgers et al. (2008) also found that perceived control and perceived difficulty had empirically distinct effects on behaviour, and suggest that each is associated with different behaviours in different circumstances. Some of these studies also suggest a third component of PBC, self-efficacy. However, Ajzen (2006) and Manstead (2011) argued that self-efficacy is commonly defined in terms of perceived difficulty, and so the two are likely to be synonymous.

Manstead and Parker's (1995) study of driving violations used a PBC measure that assessed three aspects: the perceived ease or difficulty of carrying out the behaviour; the perceived ease or difficulty of refraining from the behaviour; and the perceived level of choice over whether or not to carry out the behaviour. These three aspects, though, were found to be only weakly correlated with each other. This suggests that, while they are conceptually all related to PBC, they do not form an internally consistent scale. Such a finding is also consistent with the view that PBC is multidimensional.

Some authors (e.g. Lawton, 1998; English and Branaghan, 2012) have suggested that violations themselves come in different forms – for example, situational violations (which occur because situational circumstances, such as productivity demands, preclude the following of a rule) and optimizing violations (which serve non-task related goals, such as relieving boredom). It would be interesting therefore to consider whether different sub-factors of PBC are found with respect to violations, and whether such factors have a differential relationship with intention depending on the violation under consideration.

1.3. Linearity of control beliefs comprising PBC

Many TPB studies have taken as the object of interest a behaviour that is desirable (for example, healthy eating). For such behaviours, perceived behavioural control can easily be conceived in such a way that a high level of PBC indicates a high level of control over the behaviour. In other words, there is a linear relationship between the two. However, if the behaviour is not desirable, and PBC is measured on a bipolar scale (with positive scores indicating an inclination towards behaving in the specified manner and negative scores indicating an inclination towards *not* behaving in the specified manner), it could be argued that it is a neutral (i.e. zero) score on PBC that indicates the highest level of control over the behaviour (Parker et al., 1995).

To use a hypothetical example: a study of speeding might find that drivers report being more likely to speed at night – that is, they rate darkness as a facilitator of the behaviour – and also that they encounter a high frequency of night-time driving. The standard method of scoring and combining the control beliefs

comprising PBC (i.e. rating the facilitative effect and frequency of night-time driving separately and then obtaining the cross product of these ratings) would produce high control belief scores; a “linear” interpretation of such a score would imply that such drivers have a high level of control over their speeding behaviour. However, if they invariably speed at night, an alternative interpretation is that their level of behavioural control is actually low, because their decision whether or not to speed is being strongly influenced by an external factor. Following this line of argument, we would see the drivers who actually have the most control over their speeding (and so should have the “highest” perceived behavioural control) as the ones for whom darkness has little influence over whether or not they speed, or who are as likely to drive during daytime as at night. The behaviour of such drivers is largely dictated by their preferences rather than the presence of an external factor, and so having an extremely high or low score for behavioural intention (depending on whether their preference is to speed or to not speed) ought to be associated with a neutral control belief score.

A similar issue has been raised by Francis et al. (2004). If the behaviour of interest is *not* doing something (for example, not prescribing antibiotics for a patient with a sore throat), then it cannot be assumed that control conditions that make it easy not to perform a behaviour necessarily make it *difficult* to perform the behaviour. An interesting question therefore arises with regard to the linearity of PBC: which people are most likely to commit violations? Is it those who score closest to the mid-point of the control belief scales (whose behaviour is neither facilitated nor inhibited by external factors), or those who obtain extreme scores on these scales (whose behaviour is strongly affected by facilitating or inhibiting factors)?

1.4. Study hypotheses

Hence, two hypotheses are presented here. With respect to violations:

- Perceived behavioural control consists of multiple dimensions, which have differential relationships with behavioural intention (H1);
- The relationship between control beliefs and behavioural intention is non-linear (H2).

2. Method

2.1. Participants

2000 members of the Royal College of Anaesthetists in the United Kingdom were selected at random from the College's membership database. In order to ensure that all participants in the sample had a comparable level of professional experience, only those members who were indicated in the database as holding Fellow status were eligible for inclusion in the sample. Restricting the sampling frame in this way meant that most, if not all, of the respondents would be employed at a consultant grade or equivalent in their respective hospitals (and therefore qualified to practice autonomously).

2.2. Materials

A TPB questionnaire was prepared to examine respondent beliefs with regard to violations in the course of anaesthetic work (Phipps et al., 2009, 2010). The questionnaire presented the respondent with three scenarios, described in full in Appendix A. Each scenario culminated in the protagonist (the respondent) committing one of three violations:

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