

Improving Research Results with the Theory of Planned Behaviour

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## Abstract

**Background:** The Theory of Planned Behaviour (TPB) is a well known theory addressing the relationship between attitude and behaviour. However, research using this theory does not always produce the expected high correlations amongst the components of the theory, or account for a high proportion of the behaviour.

**Aim:** To collate information from an extensive review of the literature on the use of the TPB to predict and understand behaviour, and on the components of the theory from a practical, intervention-based viewpoint.

**Methodology:** A review of the literature on the TPB, attitudes, norms and perceived behavioural control (PBC).

**Conclusion:** Researchers planning to use the TPB need to extend their knowledge of attitudes, subjective norms, PBC and the interactions amongst these variables with other measures added to improve prediction or understanding of the behaviour under investigation.

There has been debate about the use of general psychological theory as opposed to specialised theories of driver behaviour (Grayson, 1997: 95; Rothengatter 2002). However the application of general psychological theory to driver behaviour requires that road safety researchers in this domain maintain an interest in and knowledge of the advances in psychological knowledge. There is evidence that theory based interventions are more successful (Abraham, Sheeran, Norman, Conner, de Vries & Otten (1999: 2592).

The application of the psychological theory, the Theory of Planned Behaviour (TPB), has resulted in increases in understanding and knowledge about driver behaviour (mostly through the Driver Behaviour Research at Manchester University in the mid 1990s by Diane Parker and others). Since that research has been conducted new information about the TPB has been provided through the use of the theory in other behavioural domains. This new information does not always appear to be applied in recent research using the TPB and it is important from a research perspective to ensure that theoretical models produce the best results. Poor results from the use of a theory are inclined to result in that theory being banished and the knowledge achieved sidetracked as researchers focus on different theories. Hence, a poor test of a theory is sometimes more likely to result in the theory being discredited, rather than the researcher reviewing their own methods and test of the theory itself. This can delay the development of knowledge and understanding.

The focus of this paper is to review results and information that is useful for road safety researchers, so that they may produce meaningful research outcomes. It is hoped that the paper will result in more researchers using the TPB following our suggested process that might maximise research results.

Social psychologists have long accepted that there is a relationship between attitude and behaviour. This is despite reviews such as that by Wicker (1969) in which it was suggested that the correlation was so low that the relationship was difficult to justify. However, later research has confirmed the existence of a relationship between attitude and behaviour (Kraus, 1995) and theories have been developed which claim to account for the relationship. One of the most commonly used theories is the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980) which was later developed into the Theory of Planned Behaviour (TPB) (Ajzen, 1991).

The TRA and TPB are both based upon a mediated relationship between attitude and behaviour. The mediator is 'intention to behave' which is the "immediate determinant of behaviour" (Ajzen & Fishbein, 1980: 41); however, the intention has to be specific to a particular behaviour. The TPB also includes other variables that aid in the prediction and understanding of behaviour. A model of the TPB is shown below.

## Model of Theory of Planned Behaviour – Ajzen (1991)

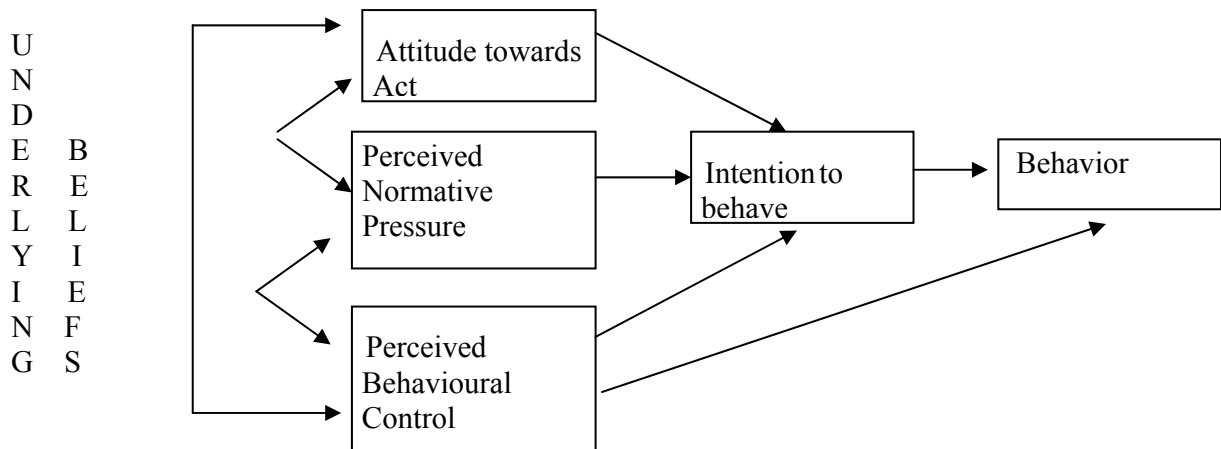


Figure 1: Model of the TPB as detailed in Ajzen (1991), p. 182

The model initially appears parsimonious and simple, but in reality it is complex with interactions amongst variables and issues that arise based on the nature of the behaviour being investigated. It is likely therefore to be more effective to look at the behaviour and work backwards to decide what variables might improve prediction or increase understanding. This methodology was suggested by Triandis (1977: 4) and Millar and Millar (1996: 578)

This paper is divided into two sections. The first section considers the research design and issues that the researcher needs to consider when planning research using the TPB. Three issues have been identified that can affect the potential results. These are Specificity, Enactment or avoidance of the behaviour and Observation or self report. Each of these issues is discussed in the following paragraphs.

The best results using the TPB are gained when the behaviour, intention, attitude, subjective norm (the individual's beliefs about what significant others believe they should do) and control issues (ease or difficulty in enacting or avoiding the behaviour) are all highly specified and measured at the same level. Ajzen and Fishbein (1980) indicated four elements that must be addressed to ensure specificity. These are action, target, context and time. Ajzen (2002) reconstructed these elements as an acronym 'TACT' (target, action, context, time). The inclusion of all four elements makes the behaviour more specific, however for some behaviours action, context and time may be sufficient. The minimum required is action and context. This means that 'behavioural categories' such as 'risky driving' cannot be used effectively in this model and that specific contexts must be used. For example, a potential question from the driving behaviour domain would be, "Driving after drinking any alcohol on my way home from work during the next two weeks".

The second issue to be considered is the enactment or avoidance of the behaviour. How should the behaviour be phrased? Is it a case of “will you exceed the speed limit (action) when driving to the party (context) on Saturday evening (time)? Or will you phrase it as “will you drive within the posted speed limits (action) on your way to the party (context) on Saturday evening (time)? The framing of the question may have an impact on the results obtained (Rise & Wilhelmsen, 1998). There are different consequences (possibly getting a speeding ticket or fine; or not getting a speeding ticket or fine) for each of the above specific behaviours and different behavioural beliefs, subjective norms and control issues may underpin whether or not a behaviour is enacted.

The third issue concerns whether the behaviour is to be measured by self-report or by observation. In some instances the choice is made by the nature of the behaviour itself or the research design. Self-reported behaviour generally produces higher correlations within the TPB than actual observed behaviour. Kraus (1995) in his meta-analysis reported that the average attitude-behaviour correlation varied from .32 for studies using observed measures of behaviour and .51 for studies using self-report. Armitage and Conner (2001) investigating relationships within the TPB found that self reported behaviour added 11% to the accounted variance in behaviour compared to observed behaviour. Therefore, there is a need to acknowledge that self-report may produce stronger relationships amongst the variables in the TPB.

After these initial decisions are made, the researcher needs to decide on the aspects of the behaviour that will impact directly on the components of the TPB. The remainder of this paper details nine necessary decisions to maximise the TPB's potential for predicting and explaining behaviour whilst retaining parsimony. These decisions are not made in any order and each is a 'stand-alone' decision however interactions amongst variables might also affect the decisions made.

The first decision to be made is whether the behaviour is volitional (that is under the control of the individual) or non-volitional (requiring external assistance). If volitional then the TRA rather than the TPB can be used which means that Perceived Behavioural Control (PBC) is excluded. PBC was introduced to the TRA to account for non-volitional behaviours (Ajzen, 1991).

The second issue relates to the inclusion of both affective and cognitive measures. The behaviour needs to be identified as consummatory (emotionally driven) or instrumental (cognitively driven) (Millar & Tesser, 1986: 271-272). If behaviour is consummatory then the inclusion of affect may improve your research results, if the behaviour is instrumental, then cognition is more important (Millar & Tesser, 1992).

The third issue relates to the experience of the participant with the behaviour. Direct experience improves predictive validity within the attitude-behaviour relationship (Doll & Ajzen, 1992). Direct experience has been linked to an

increased affective component of the relative attitude and indirect experience appears to be based on cognition (Millar & Millar, 1996). Therefore, if the participants have experienced the behaviour, inclusion of affective measures may improve prediction.

The fourth issue relates to current frequency of the behaviour (high or low) will play a part in how the components of the TPB interact. Existing high frequency behaviour may be habitual and under the control of automatic processes. In such instances previous behaviour may directly predict future behaviour; therefore the use of the TPB may not be an appropriate research design (Charng, Piliavin & Callero, 1988; Verplanken, Aarts, van Knippenberg & Moonen, 1988). Verplanken, van Knippenberg and van Knippenberg (1994) also produced evidence of interactions between habit and the attitude-behaviour correlation. When habit was weak attitudes accounted for 43% of the variance in behaviour, but when habit was strong the attitude-behaviour relationship reduced to 8%. This issue is most likely very important for the examination of driver behaviour using the TPB. Driving behaviour can become habitual and habits are unconscious processes not amenable to the cognitive aspects within the TPB (Elliott, Armitage & Baughan, 2002).

The fifth issue is the recency of the behaviour. Recency of the behaviour may also be reflected in either PBC or mediated through the cognitive component of attitude in which the memory of the previous behaviour shortcuts the intention process. There may also be issues of memory for self-reported behaviour if it is a low frequency behaviour and has not been completed recently. Careful questioning may be required to gain accurate responses.

Sixth, the behaviour may be under attitudinal control or the control of subjective norms (Trafimow & Finlay, 1996). Such behaviours may (but not always) be identified through the terms of private or public behaviour (Quine, Rutter & Arnold, 1998). Additionally, Conner and McMillan (1999) found that descriptive and moral norms were predictive of cannabis use however injunctive norms were non significant, suggesting that it is not only important to determine whether normative issues are present but also the appropriate type of normative influence.

If the behaviour is under attitudinal control, it is likely that subjective norms will play a minor role in the prediction of the behaviour. Azjen (1991) suggested that any variable may be omitted if it is not appropriate. Subjective norms have generally revealed a weak relationship with intention.

Personal disposition of the participants may also be reflected in whether or not a behaviour is under attitudinal or subjective norm control. Internally focused (low self monitoring) individuals are more likely to be under attitudinal control than externally focused (high self monitoring) individuals, who are more likely to be under subjective norm control.

The seventh issue is distance of the outcomes from the enactment of the behaviour. If the outcomes are immediate, intention may mediate the relationship between the initial predictors (attitude, subjective norm and perceived behavioural control). If outcomes are sometime in the future, the inclusion of a measure of desire (Perugini & Bagozzi, 2001) and implementation intentions (Gollwitzer & Brandstatter, 1997) may facilitate the relationships over a longer period of time. Desire adds an additional motivational perspective that focuses on emotion and implementation intentions facilitate the memory for cues as to when the individual intended to enact the behaviour.

Eighth, the frequency of the expected outcome to the behaviour must be considered. If the relationship between the behaviour and the outcome is not extremely close then the potential to enact the behaviour and not have the outcome applied may result in the behaviour being enacted despite negative consequences. This aspect is particularly pertinent for driving behaviour where, for example, many drivers exceed the speed limit and do not get caught. Similarly, in drug use, the individual may use a drug on many occasions without lasting effects, but others may only need to use the drug once to become very ill or even die.

The ninth and last issue is whether the behaviour is socially acceptable. If not acceptable, then Behavioural Expectation (BE) rather than Behavioural Intention (BI) may be more useful. Gibbons, Gerrard, Blanton and Russell (1998) suggested that for socially undesirable behaviours BE rather than BI will provide better prediction. This is on the basis that people will acknowledge that they expect to do something socially undesirable rather than intend to do it. The difference between 'expect' and 'intend' is a connotation of choice. Intention contains a measure of cognition; expectation suggests less control and an externalisation of the behaviour. Using BE instead of BI to investigate socially unacceptable behaviours could reduce impression management and should be used if there are concerns that people do not wish to admit to intentionally committing a behaviour.

Fishbein and Stasson (1990) and Sheeran (2002: 12) suggest that it does not matter whether BI or BE is used as they similarly predict behaviour. If however, the research is focused on explanation rather than prediction, BI must be used. Sheeran (2002:12) suggests that BE cannot apply in a causal model of behaviour; however, the TPB does not explain causation (Conner & Armitage, 1998), therefore the use of BI or BE might not be important depending upon the context. The majority of the road safety research that has used the TPB has used BE, although the rationale for using BE rather than BI has not been clearly articulated. Warshaw and Davis (1985) indicated that many researchers are not concerned about the potential differences between BI and BE, however there is a clear difference and this should be taken into consideration.

### *Potential errors for the unwary in the use of the TRA/TPB*

Three common errors have been observed in research that has not provided appropriate measurements for the use of the TPB. First the issue of specificity has not always been appropriately addressed. Generality can reduce the relationship amongst the TPB variables and Ajzen and Fishbein (1980) and Ajzen (2002) indicate that specificity is imperative. In addition to clearly specifying the behaviour in terms of TACT (Ajzen, 2002), the questions on attitude, subjective norm, perceived behavioural control and intention must all be phrased in similar terms to ensure measurement at the same level.

The example given above of “Driving after drinking any alcohol on my way home from work during the next two weeks” is very specific and could produce different results to “Driving after drinking any alcohol on my way home from a social event during the next two weeks”. Different contexts can produce different behaviours. This specificity can be viewed as a limitation of the theory.

Second some research has used outcomes of behaviour rather than actual behaviour. This can work where there is a strong direct relationship between the behaviour and the outcome. If the relationship between the behaviour and the outcome is weak or indirect, it is likely that the use of the TPB to predict outcome will not produce satisfactory results unless investigation of each behaviour to produce the outcome is conducted.

The third error that many researchers commit is to blame the theory. The complexity of the TPB is often not understood and in many cases poor results are caused by limitations of the research rather than flaws in the theory itself.

### *Conclusion*

This paper has garnered information available from a variety of journal articles to support the proper use of the TPB. The attitude-behaviour relationship, mediated in the TPB by intention, does not always appear strong and in many instances research does not use the underpinning knowledge of attitude, subjective norm or perceived behavioural control that might have improved the result. This paper provides some information that might help researchers tune their research designs and measures and a checklist for researchers is included at the end of this paper.

There are however other issues that researchers using the TPB also need to consider. Researchers from a variety of behavioural domains have over time included additional variables to support the basic TPB model in the prediction and/or understanding of behaviour. Six important additional variables were presented and discussed by Conner and Armitage (1998). These six variables include, belief salience, affect, self-identity, past behaviour, self-efficacy and moral norms. Although these additional variables are important, discussion of these issues is outside the scope of this paper. Finally, the TPB is a theory



under development but research indicates that it consistently produces better results and explains more of the variance in behaviour than other theories and therefore warrants attention from road safety researchers.

## Checklist for Research Using the Theory of Planned Behaviour

### Research Design

Has the behaviour been specified in terms of TACT (target, action, context, time)?

Have the effects of asking about enactment of the behaviour rather than avoidance of the behaviour been considered?

How will the behaviour be measured, e.g., observation or self report

### Dimensions of Behaviour to be considered

Is the behaviour volitional or nonvolitional? (under the control of the individual)

Is the behaviour consummatory or instrumental? (emotion or cognition)

Do the participants have direct experience of the behaviour?

How frequently is the behaviour undertaken?

Has the behaviour been undertaken recently?

Is the behaviour a private or social behaviour?

Is enactment or avoidance of the behaviour likely to have immediate outcomes?

Does enactment or avoidance of the behaviour have a close relationship to outcomes?

Is the behaviour socially acceptable?

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