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Some tests of the distinction between attitude and perceived behavioural control

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Although perceived behavioural control has recently become a popular variable for use in predicting behaviour or intention to behave, it is far from clear that this variable is theoretically distinguishable from attitude. Consequently, we performed some tests of the distinction between attitude and perceived behavioural control. In Expt 1, using participants from an American university, the semantic differential scales that have often been used to measure attitude and perceived behavioural control were submitted to factor analyses. Consistent with the distinction, a two-factor solution resulted in the attitude and perceived behavioural control items clearly loading on different factors. Further, Expt 2 demonstrated that the attitude factor predicts behavioural beliefs and does not predict control beliefs, but the reverse is true concerning the perceived behavioural control factor. Finally, in Expts 3-5, the beliefs presumed to underlie these two variables were cluster analysed. Consistent with the distinction, and paralleling findings obtained by Trafimow & Fishbein (1995), the order in which participants wrote down their beliefs exhibited significant clustering by belief type.

The theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein, 1980; Fishbein & Ajzen, 1975) has been used to understand and predict a wide variety of behaviours (see reviews by Ajzen & Fishbein, 1980; Sheppard, Hartwick & Warshaw, 1988). Despite the widespread success that researchers have enjoyed with this theory, there have still been various attempts to improve it. For example, people have suggested that several variables be added to the theory such as previous behaviour (e.g. Bagozzi, 1981; Bentler & Speckart, 1981), moral values (e.g. Gorsuch & Ortega, 1983), confidence in the correctness of normative perceptions (Trafimow, 1994), and perceived behavioural control (Ajzen, 1988). As this last variable has recently been used to predict a large number of behaviours (see below), it will be the focus of the present article. Specifically, we will examine whether or not perceived behavioural control really adds to our theoretical understanding of behaviour. In accordance with this objective, we first present a brief description of the theory of reasoned action. Second, we summarize Ajzen's (1988, 1991) assertion about what adding perceived behavioural control to the model is supposed to accomplish and some of the evidence that bears on it. Third, we present some arguments to demonstrate that different tests are needed. Finally, of course, we perform the tests and discuss the findings.

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The theory of reasoned action

The theory of reasoned action assumes that behaviour is determined by behavioural intention which, in turn, is determined by attitude and subjective norm. An attitude is a person’s evaluation of the behaviour (i.e. is it good or bad?) and a subjective norm is a person’s opinion about what most others who are important to her/him think she/he should do. Attitudes are generally measured by a series of evaluative semantic differential scales. For example (Ajzen & Fishbein, 1980; Appendix A), participants could be asked to check, on a seven-point scale, the extent to which the behaviour is ‘good–bad’, ‘unpleasant–pleasant’, ‘harmful–beneficial’, or ‘rewarding–punishing’. Responses on these scales are then factor analysed, and as long as they have reasonable loadings on the factor (hopefully there is only one factor), then the average of these four scales is taken as the ‘attitude’ score.

The theory of reasoned action also specifies the determinants of attitude and subjective norm. An attitude is formed on the basis of behavioural beliefs (beliefs about consequences) and a subjective norm is formed on the basis of normative beliefs (beliefs about the opinions of particular important others). One implication of the theory of reasoned action (Fishbein, 1980) is that attitudes can be measured directly (e.g. as in the above paragraph) or indirectly by measuring behavioural beliefs.

Adding perceived behavioural control

Ajzen (1988, 1991) argued that the theory of reasoned action is fine for understanding and predicting behaviours that are under a person’s control; however, many behaviours are not totally under a person’s control, so the theory of reasoned action may provide for less than optimal understanding and prediction of those behaviours. In order to deal with this problem, Ajzen proposed another variable that he called perceived behavioural control. In essence, perceived behavioural control refers to how easy a person believes she/he could perform the behaviour under consideration. According to Ajzen, then, behavioural intentions can be best predicted from attitudes, subjective norms, and perceived behavioural control rather than from attitudes and subjective norms only (but perceived behavioural control should not aid in the prediction of intentions when the behaviour is under the person’s voluntary control). Ajzen has further argued that perceived behavioural control is determined by control beliefs—beliefs about the specific factors that might make the behaviour easy or difficult to perform. As was true about the attitude concept, perceived behavioural control can be measured directly (e.g. by asking participants whether the behaviour is ‘easy’ or ‘difficult’ to perform) or indirectly by measuring beliefs about the specific factors that make the behaviour easy or difficult to perform.

Several studies support Ajzen’s argument that perceived behavioural control is an important variable for predicting intentions. For example, Richard, Dedobbeleer, Champagne & Potvin (1994) found that perceived behavioural control accounted for a significant proportion of variance in intentions to use a child restraint device even

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1 Ajzen has also argued that perceived behavioural control can affect behaviour in a way not mediated by intentions. However, this aspect of the theory is unimportant for the experiments to be presented, and therefore it will not be further discussed.
after the effects of attitudes and subjective norms had already been considered. Similar findings were obtained in the prediction of intentions to exercise (Godin, 1993), to perform preventive behaviours in patients with chronic obstructive pulmonary disease (McBride, 1993), to vote and lose weight (Netemeyer, Buton & Johnston, 1991), and many others (e.g. see Ajzen, 1991, Table 2 for a review).

Although many researchers have found that perceived behavioural control contributes to the prediction of intention even after attitudes and subjective norms have already been considered, not everyone has found this. For example, Chan & Fishbein (1993) found that measuring perceived behavioural control did not increase their ability to predict women's intentions to tell their partners to use condoms. Fishbein & Strassler (1990) found that perceived behavioural control failed to contribute to the prediction of intentions of non-academic university employees to attend training sessions. A similar failure was reported by Knibbe, Oostveen & Van de Goor (1991) with respect to alcohol consumption in public drinking places.

In addition to clear successes and failures of perceived behavioural control to uniquely contribute to the prediction of intentions, several researchers have obtained mixed results (see Baldero, Moore & Rosenthal, 1992). For example, Madden, Ellen & Ajzen (1992) found that the contribution of perceived behavioural control depended largely upon whether the behaviour of concern presents a problem with respect to control. There is also an issue about the importance of other variables; when other variables are important, perceived behavioural control is less important. For instance, Norman & Conner (1996) found that Ajzen's theory predicted health-check attendance among people who had not attended previously, but it failed for previous attenders. Further, although perceived behavioural control has been shown to uniquely predict intentions to use a condom when attitude-intention and subjective norm-intention correlations are low (Reinecke, Schmidt & Ajzen, 1996), perceived behavioural control is often unimportant when attitude-intention and/or subjective norm-intention correlations are high (Chan & Fishbein, 1993).

Why perceived behavioural control might just be a component of attitude

In addition to the fact that the predictive ability of perceived behavioural control is not a settled issue, a conceptual argument could be made that perceived behavioural control and attitude are not distinct constructs. To see this, suppose a person decides whether or not to perform a behaviour. The person thinks of several advantages and disadvantages, and also some reasons why the behaviour is easy or difficult to perform. One could argue reasonably that it is an advantage if the behaviour is easy to perform and a disadvantage if the behaviour is difficult to perform. Therefore, if advantages and disadvantages determine attitude (as both Fishbein and Ajzen have repeatedly stated), and if the ease or difficulty of performing a behaviour is an advantage or a disadvantage, then perceived behavioural control is merely one of many determinants of attitude.

Of course, the counter-argument to this is the simple fact that perceived behavioural control has often been shown to predict intention above and beyond what could be predicted on the basis of attitude (and subjective norm) alone. If perceived behavioural control was simply a determinant of attitude, then measuring
it separately should not increase prediction of intention—yet it does, at least in several studies. So, there is some reason to conclude that perceived behavioural control really does measure something different than attitude. Unfortunately, however, even if a thousand studies had demonstrated beyond a reasonable doubt that a combination of perceived behavioural control and attitude increases the prediction of intention above and beyond that engendered by attitude alone, it would still be possible to argue that perceived behavioural control is not a construct that is theoretically distinct from attitude. A cynic could assert that by measuring both perceived behavioural control and attitude, researchers have simply obtained two measures of attitude, and that two measures of a construct better predicts other variables (e.g. intention) than does one measure. Consequently, the prediction of intention increases, even though it is based on a false distinction. (Incidentally, according to the theory of planned behaviour, there are conditions under which perceived behavioural control should not be a good predictor of intentions. Thus, just as successful predictions of intention from perceived behavioural control do not, by themselves, justify the theoretical distinction between perceived behavioural control and attitude, failed predictions do not, by themselves, justify a rejection of this distinction.)

In order to reinforce this argument, consider how attitude and perceived behavioural control are measured. As we stated previously, attitude is measured via a series of evaluative semantic differential scales. Interestingly, perceived behavioural control is also measured with a series of semantic differential scales. For example, participants might be asked to rate, on a seven-point scale, the degree to which the behaviour is ‘easy–difficult’, ‘effortless–effortful’, etc. (Ajzen, 1988, 1991). In sum, then, attitude is measured with some semantic differential scales and perceived behavioural control is measured with some more semantic differential scales, and prediction of intention is better with more semantic differential scales than with fewer of them. Let us stress that we are not arguing with the way the variables are being measured (especially because good prediction of intention seems to be the rule rather than the exception), but we are arguing that it is difficult to make an unambiguous theoretical distinction between perceived behavioural control and attitude from the data that have thus far been obtained.

**How to test the distinction**

If the semantic differential scales used to measure attitude are really measuring something different than those used to measure perceived behavioural control, then a factor analysis performed on these scales should elicit two factors. In addition, the ‘attitude’ items should load together and the ‘perceived behavioural control’ items should load together. Further, these two factors should correlate with different variables; the attitude factor should correlate with behavioural beliefs and the

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2 An additional complicating factor is that attitude and perceived behavioural control have sometimes been found to correlate with each other, and sometimes they have not. Unfortunately, analyses of ‘multicollinearity’ have not been conclusive. Different variables can have causal effects on each other (e.g. Oliver & Bearden, 1985; Shimp & Kavas, 1984), thereby resulting in high correlations between measures of constructs that really are different; and two measures of the same construct can differ in their reliability and validity, thereby resulting in a failure to correlate (Brinberg & McGrath, 1985). Thus, regardless of the presence or absence of multicollinearity, a definitive case cannot be made in favour of or against the attitude–perceived behavioural control distinction.
perceived behavioural control factor should correlate with control beliefs. If, on the other hand, they are really measuring the same thing, then only one factor should be elicited, with the two kinds of items loading approximately equally well.

There is a second and more definitive way to test the distinction (see Trafimow & Fishbein, 1995 for a similar test of the distinction between attitude and subjective norm). According to the theory of planned behaviour, an attitude is formed when people consider what they perceive to be the various advantages and disadvantages of performing the behaviour (these are termed ‘behavioural beliefs’). In a parallel vein, perceived behavioural control is formed when people consider their beliefs about what might make the behaviour easy or difficult to perform (these are termed ‘control beliefs’). But if behavioural beliefs are considered in conjunction with each other to form an attitude, and control beliefs are considered in conjunction with each other to form perceived behavioural control, then more associations should be forged within belief types than between belief types. In other words, behavioural beliefs should become associated with each other in memory, and control beliefs should become associated with each other; however, there should not be much of a tendency for behavioural beliefs to become associated with control beliefs. Given this pattern of associations, suppose people are asked to retrieve their beliefs about performing a behaviour from memory. Each time a behavioural belief is located in memory, there are associative linkages to other behavioural beliefs that can be used as retrieval routes. Similarly, each time a control belief is located, there are associative linkages to other control beliefs that can be used as retrieval routes. However, there are unlikely to be many retrieval routes between behavioural beliefs and control beliefs. Thus, after retrieving one behavioural belief, a person can traverse an associative linkage and locate another behavioural belief; analogously, after retrieving a control belief, a person can traverse an associative linkage and locate another control belief. However, because few associative linkages have been forged between behavioural and control beliefs, the retrieval of one type of belief directly after the other type of belief has already been retrieved is unlikely. More generally, when participants are asked to write down their beliefs about performing a behaviour, their written beliefs should be clustered by belief type. Experiments 3–5 test this prediction.

To summarize, three hypotheses were tested. Firstly, we expected that factor analyses of semantic differential scales would result in two factors—an attitude and perceived behavioural control (Expt 1). Secondly, we expected that the attitude factor would correlate with behavioural beliefs and not with control beliefs; but that the perceived behavioural control factor would correlate with control beliefs and not with behavioural beliefs (Expt 2). Finally, and most importantly, we expected that participants’ beliefs would be clustered by belief type (Expts 3–5).

**EXPERIMENT 1**

**Method**

**Participants**

Fifty-eight male and female undergraduate psychology students participated in the experiment. Participation was voluntary.
Materials

Questionnaires were constructed in order to elicit attitude and perceived behavioural control measures for two behaviours. To eliminate the possibility that we might unconsciously choose behaviours that would be likely to support our own point of view, we asked a person who was blind to the experiment to choose two behaviours, and these were used in the experiment. The behaviours were (1) donating money to charity and (2) going home for Thanksgiving.

Ajzen & Fishbein (1980) suggested that attitudes can be measured by seven-point evaluative semantic differential scales. The following were adopted from Appendix A of their book: (1) good–bad, (2) unpleasant–pleasant, (3) harmful–beneficial, and (4) rewarding–punishing. Ajzen (1988, 1991) suggested that perceived behavioural control can be similarly measured, so the following were adapted from chapter 6 of his book: (1) easy–difficult and (2) effortless–effortful. Finally, using computer-generated random numbers, these six (four for attitude and two for perceived behavioural control) semantic differential scales were presented in a random order for the two behaviours.

Procedure

Each participant was given a copy of the questionnaire and a pencil. The instructions were to ‘Please make a check mark (×) on each scale below in the blank that best represents your response to the item’. Participants subsequently filled out the questionnaires at their own pace, and were finally thanked for participating and debriefed.

Results

After appropriate reverse scoring, all six semantic differentials for each behaviour were included in principal components factor analyses with varimax rotations. As Table 1 indicates, two factors were obtained for each behaviour (variance accounted

| Table 1. Factor loadings of items measuring attitude and perceived behavioural control |
|-----------------------------------------|----------------|----------------|
| Behaviour                              | Factor 1 | Factor 2 |
| Donate money to charity                |          |          |
| Perceived behavioural control          |          |          |
| Effortless–effortful                   | .08     | .82     |
| Easy–difficult                         | .02     | .82     |
| Attitude                               |          |          |
| Pleasant–unpleasant                    | .73     | .36     |
| Good–bad                               | .79     | -.01    |
| Beneficial–harmful                     | .54     | -.00    |
| Rewarding–punishing                    | .74     | .04     |
| Go home for Thanksgiving               |          |          |
| Perceived behavioural control          |          |          |
| Effortless–effortful                   | -.02    | .89     |
| Easy–difficult                         | .17     | .86     |
| Attitude                               |          |          |
| Pleasant–unpleasant                    | .74     | .22     |
| Good–bad                               | .84     | -.00    |
| Beneficial–harmful                     | .85     | .19     |
| Rewarding–punishing                    | .86     | -.10    |
for by the two factors was 57.6 and 72.9 per cent for the two behaviours), and the factor loadings were generally consistent with the attitude/perceived behavioural control distinction and inconsistent with the argument that perceived behavioural control is simply another aspect of attitude.

**EXPERIMENT 2**

Experiment 2 was performed to (a) replicate Expt 1, but with an additional behaviour and (b) to demonstrate the discriminant validity of the attitude–perceived behavioural control distinction. More specifically, the goal was to show that attitude correlates better with a behavioural belief index than does perceived behavioural control, and that perceived behavioural control correlates better with a control belief index than does attitude.

**Method**

**Participants**

Twenty-four undergraduate psychology students volunteered to participate in the experiment.

**Procedure**

The procedure was similar to that used in Expt 1, but the behaviour of concern was ‘going to Juarez in the next month’ (Juarez is a city about 50 miles from the University, and is a popular place for students to meet). However, three additional measures were included and seven-point scales were used for each. These were: (1) behavioural beliefs, which were measured by having participants list the advantages and disadvantages of performing the behaviour and rating the importance of each; (2) control beliefs, which were measured by having participants list what factors might make the behaviour easy or difficult to perform and rating the importance of each; and (3) behavioural intentions, which were measured by having participants rate the extent to which they intended to perform the behaviour.

**Results**

**Factor analysis**

As in Expt 1, a principal components factor analysis (varimax rotation) was performed to show that the attitude–perceived behavioural control distinction would result in two clean factors. As Table 2 indicates, two factors were obtained that accounted for 72.6 per cent of the variance. Further, consistent with the distinction, the attitudinal items loaded strongly on the attitude factor, and the control items loaded strongly on the perceived behavioural control factor. Finally, these factors were saved for use in the subsequent analyses.

**Predictive and discriminant validity**

A behavioural beliefs index and control beliefs index were computed by summing the ratings for each behavioural belief and control belief, respectively. These indices were then correlated with the attitude and perceived behavioural control factors that were saved from the previous analysis. Consistent with the distinction, the
Table 2. Factor loadings of items measuring attitude and perceived behavioural control for ‘going to Juarez in the next month’

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor 1</th>
<th>Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived behavioural control</td>
<td>.12</td>
<td>.92</td>
</tr>
<tr>
<td>Effortless-effortful</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easy-difficult</td>
<td>-.13</td>
<td>.85</td>
</tr>
<tr>
<td>Attitude</td>
<td>.83</td>
<td>.23</td>
</tr>
<tr>
<td>Pleasant-unpleasant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good-bad</td>
<td>.91</td>
<td>-.10</td>
</tr>
<tr>
<td>Beneficial-harmful</td>
<td>.67</td>
<td>-.25</td>
</tr>
<tr>
<td>Rewarding-punishing</td>
<td>.81</td>
<td>.07</td>
</tr>
</tbody>
</table>

Behavioural beliefs index was significantly correlated with the attitude factor \( (r = .67, p < .001) \) but not with the perceived behavioural control factor \( (r = .28, p > .1) \). Analogously, the control beliefs index was significantly correlated with the perceived behavioural control factor \( (r = .52, p < .02) \), but not with the attitude factor \( (r = -.16, p > .1) \). Further, \( t \) tests on both pairs of correlations (i.e. \( .67 \) versus \( .28 \) and \( .52 \) versus \( -.16 \)) indicate that both comparisons were significant \( (p < .01 \) in both cases). Finally, it is notable that there were intrusions (e.g. a control belief in the list of behavioural beliefs) for only one of the participants. More generally, the pattern of correlations supports the distinction.

**Intention**

Consistent with Fishbein & Stasson (1990), although attitude was a good predictor of intention \( (r = .69, p < .001) \), perceived behavioural control was not \( (r = .22, p > .1) \). Further, the combination of attitude and perceived behavioural control failed to significantly improve the prediction of intention above that engendered by attitude alone \( (R = .73 \) versus \( r = .69, p > .1) \).

**EXPERIMENTS 3 AND 4**

Experiments 3 and 4 were performed in order to test the hypothesis that there are more associations within belief types (behavioural beliefs versus control beliefs) than between belief types. More specifically, participants were asked to write down their beliefs about a behaviour, and we predicted that their retrieved beliefs would be clustered by belief type.

**Method**

**Participants**

Sixty-five undergraduate psychology students participated in Expt 3 and sixty-seven undergraduate psychology students participated in Expt 4. Participation was voluntary.
Procedure

Participants in Expt 3 were asked to write down six beliefs they had about ‘your exercising regularly’. Participants in Expt 4 were asked to write down six beliefs they had about ‘your getting an A in every class this semester’.

Results

All of the beliefs participants wrote down were coded as being a behaviour belief or a control belief (there was 92 per cent agreement between independent raters). We then used the adjusted ratio of clustering (ARC) index proposed by Roenker, Thompson & Brown (1971), and recommended by Srull (1984), in order to determine if the beliefs were clustered by belief type. A score of 1 on this index indicates perfect clustering and a score of 0 indicates chance clustering. That is, if participants retrieved beliefs at random, their ARC scores would have an expected value equal to 0. Negative scores indicate less than chance clustering. ARC scores were computed by using the following formula (Roenker et al., 1971):

$$ARC = [R - E(R)]/[\max R - E(R)]$$

where

R = total number of observed category repetitions, max R = maximum possible number of category repetitions, and E(R) = expected (chance) number of category repetitions.

Two t tests (one for each experiment) were conducted in order to test whether participants’ beliefs were clustered by belief type at a greater than chance level. In fact, ARC scores were significantly greater than zero (chance) in both Expt 3 ($M = .82, t(8) = 6.71, p < .01$) and in Expt 4 ($M = .51, t(12) = 3.19, p < .01$). Additionally, it is interesting that only 9 per cent of the responses in Expt 3 were control beliefs, compared to 74 per cent in Expt 4 (total beliefs listed averaged 5.64 and 5.69 in Expts 3 and 4, respectively), which is further consistent with the distinction.

EXPERIMENT 5

Experiments 1 and 2 used factor analytic paradigms to demonstrate the discriminant validity of the distinction between attitude and perceived behavioural control, while Expts 3 and 4 used clustering (ARC) analyses to show that people form associations

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8 Most of the participants in both experiments tended to write down only behavioural beliefs or only control beliefs. Obviously, it was impossible to compute an ARC score for these participants. Further, participants who retrieved only one behavioural or control belief were also excluded from this analysis. When only one member of a category is retrieved, clustering depends solely on the position of that item in the list rather than on the proximity of that item to another item of the same category. In sum, only those participants who retrieved at least two behavioural beliefs and two normative beliefs were included in this analysis, hence the degrees of freedom in the two studies are much lower than the number of participants who actually participated.

4 One might criticize Expts 3 and 4 by arguing that the small sample sizes used in these experiments reduces the confidence that can be placed in the findings. In contrast, we would argue that because highly significant findings were obtained despite small sample sizes, the effects must be extremely powerful! However, just to make sure, we replicated Expt 3 with a new sample. As in Expt 3, participants’ beliefs were clustered by belief type at a greater than chance level. Consistent with previous findings, ARC scores were impressively greater than zero (chance) ($M = .85, t(7) = 8.42, p < .01$).
among belief types but not between them. However, what seems missing is a demonstration that the number of control beliefs people generate is connected to the importance of perceived behavioural control for the behavioural intention under consideration. In other words, when perceived behavioural control adds to the prediction of behavioural intentions, people should spontaneously generate a lot of control beliefs; in contrast, when perceived behavioural control is unrelated to behavioural intentions, relatively few control beliefs should be generated.

Method

Participants

Fifty-three males and female undergraduate psychology students participated in the experiment. Participation was voluntary.

Procedure

Participants were randomly assigned to fill out a questionnaire about one of two behaviours. These were ‘wearing a seat belt’ and ‘changing your own oil in your car’. We hoped that perceived behavioural control would be a more important determinant of behaviour in the latter than in the former behaviour. On the first page of the questionnaire, participants were asked to list eight beliefs about their performing the behaviour. Then, on the second page, they filled out semantic differential scales from which intention, attitude, and perceived behavioural control measures could be constructed, as in Expts 1 and 2. (The reason participants listed their beliefs prior to responding to the semantic differential scales was to prevent the beliefs from being influenced by the scales.)

Results

Two kinds of analyses were conducted. First, multiple regression analyses were used to determine the extent to which perceived behavioural control predicted behavioural intentions in each condition. Second, mean numbers and proportions of control beliefs were computed and compared across the two conditions.

Multiple regression analyses

Intentions to ‘wear a seat belt’ were well predicted by attitudes \((r = .77, p < .01)\), but not by perceived behavioural control \((r = .26, p > .1)\). In terms of multiple regression, the multiple correlation was \(.77 (p < .01)\), the attitude beta weight was \(.79 (p < .01)\), and the perceived behavioural control beta weight was \(-.06 (p > .1)\). In sum, intentions to perform this behaviour were completely accounted for by attitudes, and perceived behavioural control was essentially irrelevant.

In contrast, intentions to ‘change your own oil in your car’ were well predicted by both attitudes \((r = .84, p < .01)\) and perceived behavioural control \((r = .80, p < .01)\). In terms of multiple regression, the multiple correlation was \(.89 (p < .01)\), the attitude beta weight was \(.55 (p < .01)\), and the perceived behavioural control beta weight was \(.41 (p < .01)\). In sum, both attitudes and perceived behavioural control were relevant to the formation of behavioural intentions.
Means and proportions

The beliefs that participants listed on the first page of the questionnaire were coded as being behavioural beliefs or control beliefs. Because the above analyses indicate that perceived behavioural control is a much more important determinant of behavioural intentions in the ‘oil’ than in the ‘seat belt’ condition, we expected participants to list more control beliefs in the former than in the latter condition. Consistent with expectations, although there was no discernible difference in the overall numbers of beliefs participants listed between the two conditions (overall $M = 7.57$), there were large differences in both the numbers and proportions of control beliefs. Specifically, participants in the ‘oil’ condition listed more control beliefs than did those in the ‘seat belt’ condition ($M = 3.2$ and $M = .39$, $t(51) = 6.96$, $p < .01$) and similar results were obtained when proportions were computed ($M = .43$ and $M = .05$, $t(51) = 6.65$, $p < .01$).

GENERAL DISCUSSION

We argued earlier that at least two arguments could be made against the distinction between attitude and perceived behavioural control. First, many researchers have failed to find that the prediction of intention is better from a combination of perceived behavioural control and attitude than from attitude alone. Second, even if this were not true, it is possible that measuring perceived behavioural control and attitude is tantamount to having two measures of attitude—which naturally would be expected to be more valid than having only one measure of attitude. Contradicting these arguments, however, are four findings that are consistent with the distinction. First, the factor analyses that were performed in Expts 1 and 2 resulted in two factors rather than in one factor. If the perceived behavioural control measure was simply another way of measuring attitude, then only one factor should have been elicited. Second, attitude and perceived behavioural control were shown to correlate with different variables, thereby demonstrating the predictive and discriminant validity of the distinction. Third, the beliefs that are presumed to cause attitude and perceived behavioural control were clustered by belief type. If participants had not distinguished between the two belief types, then mean ARC scores in Expts 3 and 4 should not have differed significantly from zero. Finally, Expt 5 demonstrated a connection between the importance of perceived behavioural control in determining intentions and the number of control beliefs people spontaneously generate. In sum, the distinction between attitude and perceived behavioural control has gained support.

Of course, as in all research, there are potential limitations that should be considered. First, the perceived behavioural control items in Expts 1 and 2 were very similar to each other in how they were worded. It could be this similarity that caused them to load on the same factor rather than because they were good measures of perceived behavioural control. On the other hand, the attitude and perceived behavioural control factors correlated with different variables. Further, a ‘similarity of wording argument’ does not account for the findings obtained from Expts 3–5.

A second limitation is that the exact process by which participants retrieved items in Expts 3 and 4 is not completely clear. The present data leave open at least two
possibilities. One possibility is that participants had previously thought about exercising regularly (Expt 3) and about doing well in their classes (Expt 4) during the normal course of their lives, distinguished between behavioural beliefs and control beliefs while doing so, and then retrieved these beliefs when asked to do so in the experiments. An alternative possibility is that participants had not thought about these behaviours prior to the experiments; but when asked to write down their beliefs by an experimenter, they then made the distinction between behavioural and control beliefs—possibly as a retrieval aid. Although we believe the former possibility is far more likely, the latter has not been disconfirmed by experiment. One way of dealing with this issue in future research might be to include a condition where participants are asked to write down their beliefs about a behaviour that they have never before considered (and a pilot study might be necessary to find these behaviours).

When a researcher wishes to investigate the importance of behavioural and control beliefs in predicting attitudes and subjective norms, several methods can be used to elicit the beliefs from the participants. For example, in Expts 3 and 4, we simply instructed participants to write down six beliefs about the behaviour of concern. Despite this, we do not recommend this method for most purposes. To see why we used it, consider that our goal in Expts 3 and 4 was to elicit both kinds of beliefs with the same set of instructions. Further, we intended that the instructions be sufficiently vague to avoid priming participants to cluster the beliefs they wrote down. Suppose we had instructed participants explicitly to ‘write down (1) beliefs about advantages or disadvantages and (2) beliefs about what makes the behaviour easy or difficult to perform’. Then participants might have obeyed the first part of the instructions first, and the second part second, and good ARC scores would have been obtained. However, because these ARC scores might have been an artifact of the instructions rather than a result of the actual pattern of people’s associations involving behavioural and control beliefs, we instead chose the method that was used. Most researchers, though, use behavioural and control beliefs to predict other variables, and they are less interested in the pattern of inter-belief associations. In this case, it makes sense to elicit beliefs by specifically instructing participants to write down advantages and disadvantages (behavioural beliefs) and reasons why the behaviour is easy or difficult to perform (control beliefs). The data obtained in Expt 2 demonstrate that this method results in good predictive and discriminant validity.

It is interesting to consider how the present methodology parallels that used by Trafimow & Fishbein (1995; also see Trafimow, Triandis & Goto, 1991 for conceptually similar methodology) to test the distinction between attitude and subjective norm. Prior to the Trafimow and Fishbein research, there were several reasons to doubt the distinction. These included large correlations between attitude and subjective norm, crossover effects (i.e. manipulating attitude sometimes causes

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3 There was no special reason why the number of beliefs obtained had to equal six (in fact, we used eight in Expt 5 just to have some variation). We hoped that six beliefs would be enough to allow participants to demonstrate clustering, while at the same time not forcing them to struggle to make up beliefs for the experimenter’s benefit.

4 We would like to point out a relevant comment by our action editor (Vincent Yarby): ‘...the mere fact that people do not seem to think about control beliefs when they are prompted for the advantages and disadvantages of carrying out a behaviour is, in and of itself, some indication that these two kinds of beliefs are spontaneously distinguished’ (note the lack of intrusions in Expt 2). We also thank our action editor for suggesting Expt 5.
changes in subjective norm and vice versa), and philosophical problems (e.g. see Miniard & Cohen, 1981). In order to deal with these issues, Trafimow & Fishbein reasoned that if attitude and subjective norm were really separate constructs, then, if participants wrote down their beliefs about performing a behaviour, there should be clustering by the belief types presumed to determine attitude and subjective norm (behavioural beliefs and normative beliefs, respectively). Although they had to make special efforts to induce enough participants to write down normative beliefs (so ARC scores could be computed), their data were consistent with this reasoning.

In addition, however, Trafimow and Fishbein performed other research that supported the distinction between attitude and subjective norm for which there is no parallel in support of the distinction between attitude and perceived behavioural control. Specifically, Trafimow & Fishbein (1994a) manipulated attitudes toward performing a behaviour that previous research had suggested was either under attitudinal control or normative control. They found that manipulating attitudes had a much greater effect on intentions to perform attitudinally controlled behaviours than normatively controlled behaviours. Further, Trafimow & Fishbein (1994b) obtained analogous effects when they manipulated subjective norms. Clearly, similar research on the distinction between attitude and perceived behavioural control would be desirable.

References

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