Predicting Willingness to Donate Blood

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Abstract

New Zealand shares a common problem with other countries: a shortage of blood donors. Approximately 4% of New Zealand's total population donate blood, yet up to 20% may need to receive donated blood or blood products. However, there has been little success in accurately predicting willingness to donate blood, and greater knowledge is needed of those variables most likely to predict potential donors' behaviour, so that efforts to increase the number of blood donors can be effectively directed.

This study compared the predictive ability of Ajzen's theory of planned behaviour, based on the measurement of attitudinal variables, and Labaw's behavioural approach, in the context of willingness to donate blood. The findings indicated attitudinal variables were better predictors of behavioural intentions but a behavioural approach better predicted reported donation behaviour. This result provides support for further study of the framework proposed by Labaw.

Keywords: Blood donation, Predicting behaviour, Theory of planned behaviour

1. Introduction

Tighter screening of New Zealand blood donors in recent years has led to a decrease in the volume of blood collected. The onset of the AIDS epidemic in the 1980s and the introduction of donor screening for Hepatitis have reduced New Zealand's pool of potential blood donors. More recently, people who have spent a total of six months or more in the United Kingdom, between 1 January 1980 and 31 December 1996, no longer qualify to give blood because of the risk of blood contaminated with CJD (Creutzfeld-Jakob Disease).

Despite the fact that the volume of collected blood has fallen, there has been an increase in the demand for whole blood and blood products as a result of greater use of blood products to treat medical conditions such as cancer, and because new uses have been found for blood products (Ibrahim & Mobley, 1993). Unfortunately, this increased demand for blood has led to a shortage of active blood donors in New Zealand and worldwide.

The volume of blood collected could be increased in two ways: by encouraging new donors to start donating, or by encouraging existing donors to donate more often, or both. The challenge for blood collection services is to devise strategies that encourage non-donors to make their first donation, to devise further strategies to reduce donor dropout, and to motivate behaviour change that will lead to committed regular donation. Establishing a reliable method of predicting who is most likely to donate blood would improve the likelihood of such strategies succeeding.

Much of the previous research on blood donation has focussed on measuring and understanding attitudinal variables, or testing existing models of attitude-intention-behaviour associations (Allen & Maddox, 1990). In fact, research on donation behaviour has been a major arena for testing attitude theory in recent years, particularly research using the Fishbein (1967) extended model of behavioural intentions (LaTour & Manrai, 1989). Yet, in 1969 Wicker stated,

…research is needed on various postulated sources of influence on overt behaviour. Once these variables are operationalised, their contribution and the contribution of attitudes to the variance of overt behaviour can be determined. Such research may lead to the identification

of factors or kinds of factors which are consistently better predictors of overt behaviour than attitudes (p. 75).

Wicker's comment on behaviour research is still valid today, since questions are still being raised about the performance of attitude models in predicting and explaining intentions and behaviour (Kraus, 1995; Sutton, 1997; Wright & Klÿn, 1998).

The main objective of this paper was to examine an alternative to the traditional attitude-based models for predicting blood donation behaviour and to compare its predictive performance with that of a specific attitudinal approach, the theory of planned behaviour.

The paper begins by reviewing the direction previous blood donation research has taken. We then examine the ability of attitudes to predict behaviour, and consider whether there is a better alternative to attitude measurement for predicting people's willingness to donate blood. Having reviewed theoretical approaches to predicting behaviour, we outline and report the results of research that replicates an application of the theory of planned behaviour to blood donation and compares this with an alternative behavioural approach.

2. Blood Donation Behaviour

A consistent finding of blood donor research is that most of the blood donated comes from repeat donors; the majority of people never donate (Oswalt, 1977; Piliavin, 1990). For this reason, blood donation centres are heavily dependent upon a core of committed, regular donors. What is less clear in the reported findings is which motivational characteristics distinguish those who are most willing to donate blood from those who are not.

Research on blood donation behaviour to date has tended to take one of three directions. One aspect of donor behaviour that has been investigated is the use of motivational incentives, such as monetary inducements, to encourage donation. Findings have not been generally supportive of a philosophy of using paid volunteers. In fact, an early study by Upton (1974; cited in Piliavin, 1990) found that rewards or incentives may actually be counter-productive and lead to people being less likely to help or respond in the future. Moreover, further research into the merits of using incentives to encourage donation is no longer relevant because collecting blood from paid volunteers is no longer regarded as desirable.

Before the mid-1970s, blood collection in the USA mostly came from paid donors or from donors in insurance-based systems. However, in 1973, the USA Department of Health, Education, and Welfare introduced the National Blood Policy, which strongly discouraged the sale of blood, and encouraged the altruistic donation of blood. It was argued that payment for blood led to donors being less than truthful about their health, consequently purchased blood was less safe than donated blood.

Unlike the previous practice in the USA, the "community responsibility system" has always been used exclusively in New Zealand and in other countries. Since blood donation services cannot use money or other types of incentives or inducements to donate blood, they must attempt to find alternative ways to attract, recruit, and maintain a voluntary donor pool (Allen & Maddox, 1990).

It was earlier agreed that there was an obvious need for blood recruitment agencies to gain as much information as possible about both positive and negative donor motivation to donate blood (Oswalt, 1977). Correspondingly, many of the previous studies on blood donation have focused on a second research direction to investigate blood donation behaviour, in particular, concentrating on the attitudes and motivations of those who give blood, and on the factors that deter those who do not (Piliavin, 1990).

Donors' reasons for donating can be divided into two basic categories. The first is intrinsic, reasons that come from within and relate to values, interests and one's sense of responsibility. The second category is extrinsic motives, namely reasons that are based in the actions of others, such as social pressure and the promise or threat of rewards and punishments. The three most common reasons cited for donating blood fall into both categories and are: personal benefit, social pressure and altruism (Condie, Warner & Gillman, 1976; Drake, Finkelstein & Sopolsky, 1982). Altruism is the reason cited most often (Oswalt & Gordon, 1993; Piliavin, 1990). However, it is unclear whether altruism is the reason for the motivation to donate, or whether donors rationalise their reason to donate by citing altruism. By contrast, at least one study has found that altruism and social responsibility were among the least significant variables distinguishing donors from non-donors (Condie, Warner & Gillman, 1976). Interestingly, this study was conducted at the time that the USA was changing to a social responsibility donation collection system.

Further studies have reported reasons people cited for not giving blood or discontinuing as a blood donor. A review of the literature by Piliavin (1990) found the

reason most cited for non-donation was medical problems. Fear of needles, pain, sight of blood, weakness, dizziness, adverse reactions, apathy, time constraints, lack of convenient opportunity and, more recently, fear of contracting AIDs, are also commonly cited reasons given for non-donation (Piliavin, 1990; Allen & Butler, 1993; Oswalt & Gordon, 1993). Piliavin and Callero (1991) conclude that people who choose not to donate are less likely to have a family member who donates, and are under less strong social pressures than those who do give.

The demographic characteristics of donors and non-donors have also been investigated. Many earlier findings are now less relevant because of the evolving demographic changes that have occurred in employment and household characteristics. For example, in nine early studies that Oswalt (1977) examined for gender effects, men represented between 66% and 91% percent of the donor samples. However, more recent studies report considerably smaller percentages of male donors (Piliavin, 1990). Some cultural changes that may partly explain the increase in female donors include the fact women are now having fewer children, which means they are able to donate more often, and their donation history is less interrupted. The increase in the number of women in the workforce has also provided women with more opportunity to donate by attending the mobile blood collection services that regularly visit workplaces.

A third research direction into blood donor behaviour has been to focus on acquiring a greater understanding of what leads donors to donate for the first time, and secondly, what makes first-time donors develop into regular, committed donors. This information has been used to develop profiles of donors, based on their distinguishing characteristics, as a guide to recruitment. Numerous personality characteristics have been reported including: altruism; a desire for self-sacrifice; a strong need for recognition and prestige; high energy levels; a greater propensity for original thinking; higher organisation membership and more voluntary donations; lower self-esteem; willingness to take fewer risks; greater concern with personal and family health; and greater conservatism (Oswalt, 1977; Piliavin, 1990). Yet Piliavin's review of these studies concludes that no clear picture has emerged to identify a "typical" potential donor.

To date, although payment for blood and many other aspects of donor motivation have been investigated, the question of who will become a regular, committed donor remains unanswered. In 1977, Oswalt stated that additional surveys of blood donor and non-donor motivations are not likely to produce any significant new information since essentially the same information has been forthcoming for the last 20 years. A more recent literature review by Piliavin (1990) supported this view. She concluded that there is no reliable way to predict who is most likely to donate blood.

Nevertheless, since providing a dependable supply of blood is a primary mission for most blood centres, it is logical to target donors who are most likely to donate blood. If a reliable method of detecting differences between those who are more likely and less likely to donate blood were found, this could help blood donation organisations formulate specific strategies that aim at attracting and retaining those who are the most likely prospects.

3. Approaches to Predicting Donor Behaviour

3.1 Using Attitudes to Predict Behaviour

Occupying a central position in the study of both social psychology and consumer behaviour is the concept of attitude (Foxall, 1980; Ajzen & Fishbein, 1980). In fact, Foxall states that attitude is one of the most important behavioural science variables to have found a place in marketing thought and practice. However, between the mid-1960s and the late 1970s attitude research received much criticism. Years of early research failed to provide strong support for behavioural consistency or predictive validity of attitudes. It was found that people neither behaved consistently across situations, nor acted in accordance with their measured attitudes, and only a very small proportion of behavioural variance could be explained by reference to attitudinal variables (Eagly & Chaiken, 1993).

Nevertheless, Ajzen and Fishbein considered this attitude-behaviour inconsistency and the poor explanatory power of attitudes as primarily a measurement problem (Kraus, 1995). In response to measurement issues Ajzen and Fishbein developed the theory of reasoned action, which has become one of the most systematic and widely used cognitive approaches to attitude conceptualisation and measurement in marketing (Foxall & Goldsmith, 1998). The theory of reasoned action is an extension of Fishbein's (1963) expected-value theory of attitude, which remains part of reasoned action theory. The theory of reasoned action places attitudes within a sequence of linked cognitive constructs: beliefs, attitudes, intentions and behaviour. It is based on the assumption that people are basically rational and make systematic use of the information

available to them. That is, they consider the implications of their actions before they decide to behave in a given way (Ajzen & Fishbein, 1980; East, 1997).

Reasoned action theory views a person's intention to perform, or not perform, a behaviour as the immediate determinant of the action. The theory states that attitude to the behaviour is one determinant of intention. A second determinant, subjective norm, refers to the internalised influence of people who are important to a respondent. The theory of reasoned action was developed explicitly to deal with behaviours over which people have a high degree of volitional control (Ajzen, 1988). The theory has not been successful when attempting to explain or predict the behaviour of people whose behavioural goal depends not only on their intention, but also on other factors, such as the required opportunities and resources.

For this reason, Ajzen extended the theory of reasoned action and developed the theory of planned behaviour (Ajzen, 1985). The theory of planned behaviour explicitly recognises the possibility that many behaviours may not be under complete control, therefore the concept of perceived behavioural control, which is measured as a person's self-perceived ability to take some action if he or she wants to take that action, is added to address behaviours of this kind.

Giles and Cairns (1995) tested the predictive ability of the theory of planned behaviour by focussing on blood donation. They concluded that the prediction of blood donation was not under complete control, and measurement was therefore improved using the theory of planned behaviour compared to the theory of reasoned action. However, this conclusion begs the question of whether an alternative approach would have been an even better predictor of blood donation behaviour.

3.2 An Alternative Approach To Predicting Behaviour

Two decades ago Foxall (1983) concluded that those aspects of marketing research that relied on attitudinal-intentional-behavioural correspondence from prior verbal behaviours required comprehensive reappraisal. As already mentioned, many studies rely on psychological approaches to explain and predict human behaviour. In particular, the Fishbein behavioural intentions model is described as the most sophisticated technique available for such predictions (Foxall, 1986). Yet, meta-analyses of research using the theory of reasoned action and the theory of planned behaviour show that these models only explain, on average, between 40% and 50% of the variance in intention, and between 19% and 38% of the variance in behaviour (Sutton, 1998).

One avenue of reappraisal of the use of cognitive variables to predict behaviour is to consider an alternative approach using behavioural variables. Foxall (1986) argued that such an approach will yield greater dividends than other approaches, and studies have found that measures of past behaviour improve predictions of behaviour compared to those provided by cognitive measures (Sutton, 1998). The behaviour modification perspective that evolved from the work of Skinner (1953) also discounted the value of cognitive measures, instead focusing on environmental factors that influence behaviour (Nord & Peter, 1980). In fact, Nord and Peter maintained that many marketing objectives can be accomplished without psychological theories, by simply studying environmental conditions and manipulating them to influence consumer behaviour.

The essence of this alternative approach to predicting behaviour is also found in a book by Labaw, published in 1980, in which she proposed a foundation for a systematic theory of questionnaire design (Gendall, 1998). Though Labaw's interest was in questionnaire design, her approach to this problem was based on the assumption that the objective of most surveys is prediction; for most market research surveys, prediction of consumer behaviour. Labaw's approach to questionnaire design was the result of her frustration with the lack of success of the accepted attitudinal approach.

Labaw concluded that, to predict behaviour, attitudinal questions, the answers to which can never be externally validated, should be replaced with questions about respondents' environment, knowledge and actual behaviour; in other words, questions that have a verifiable answer. Labaw argued that by adopting this approach, researchers could make better predictions of respondents' behaviour than is possible by measuring respondents' attitudes.

Like Ajzen's theory of planned behaviour, which measures three determinants of behaviour, Labaw's approach also focuses on three components. The first, environment, Labaw described as the physical aspects of respondents' lives over which they have little control but which impinge on their ability to act or respond in specific ways, regardless of their attitudes. These aspects include age, gender, health status, location, mobility level and education level. Labaw believed these aspects

are important because they provide greater depth to understanding human behaviour than attitudes, which may be much shorter lived. For example, it is known that young people are more likely to donate blood for the first time, establishing that age is a useful predictor of intention to donate blood.

Labaw referred to the second component in her approach, knowledge, as the respondent's level of knowledge about the topic. Labaw reasoned that a respondent's level of knowledge about, for example, blood donation may have a direct influence on his or her blood donation behaviour and is therefore a useful predictor of behaviour. This belief is supported by a recent Australian study that found a strong positive relationship between knowledge and willingness to donate blood (Adam & Soutar, 1999). For example, respondents' own donation behaviour may directly relate to whether or not they know there is a shortage of blood donors. An early finding by Drake (1978) reported that awareness of the need to have a consistent blood supply was a leading factor in the donor's decision to donate (cited in Allen & Maddox, 1990).

The third component of Labaw's approach to predicting behaviour is respondents' actual behaviour; what they do, and have done, compared with what they might do. Labaw argued that this behaviour component sorts out priorities among respondents' competing attitudes, a problem identified with attitudinal approaches. In contrast to Ajzen's cognitive approach, and in support of Foxall's (1983) view, Labaw reasoned that respondents' future behaviour is more accurately determined by their current or past behaviour, than by their attitude to that behaviour. For example, a regular donor to charity may be more likely to become a blood donor than someone who is not a regular charity donor.

However, unlike Ajzen's theory of planned behaviour, Labaw's approach to predicting behaviour has not been widely operationalised or tested. Therefore, it is not known whether her approach, using questions that can be truthfully answered, has greater predictive ability than Ajzen's theory of planned behaviour, based on attitudinal questions. However, given the ongoing debate about the relatively low predictability of attitudinal variables, we believe it is important to explore Labaw's alternative approach to predicting behaviour.

4. Research Design

The first aim of this study was to replicate the findings of Giles and Cairns' (1995) investigation of the ability of the theory of planned behaviour to predict intention to donate blood. The second aim was to compare the predictive ability of variables based on Labaw's approach to questionnaire design and Ajzen's theory of planned behaviour.

The study was conducted in two stages: a qualitative stage followed by a quantitative survey. The purpose of the qualitative stage was to help develop the belief-based questions that play a central role in the theory of planned behaviour. Following Ajzen's (1991) approach to questionnaire design, respondents were asked a series of questions about blood donation to elicit their salient beliefs about the advantages and disadvantages of donating blood. They were also asked about their abilities and opportunities that make the action of donating blood easier or harder to perform, and to identify people or groups who think they should donate blood. These salient beliefs provided the basis for constructing the theory of planned behaviour part of the questionnaire that was then used in the second stage of the study.

The process of selecting the questions to include in the Labaw section of the questionnaire involved detailed preliminary discussions with representatives from the New Zealand Blood Service and a search of the literature to identify relevant variables. As Labaw's approach suggested, questions were developed to measure relevant aspects of the respondents' environment (for example, their age, sex, education), their knowledge of blood donation (for example, how often a donor can give blood, eligibility criteria to donate blood) and their behaviour (for example, past blood donation behaviour, other donation behaviour, such as potential organ donation).

Following a similar research design and sample size to the study by Giles and Cairns, the data for this study were collected from a convenience sample of 100 students and staff from a university at which regular blood collections are made. Although this sample was not representative of all blood donors it was, nevertheless, selected from a population with a high proportion of potential donors. Drawing a convenience sample from a campus population is a research method that is commonly reported in blood donation studies (e.g. Kazdin & Bryan, 1971; Oborne & Bradley, 1975; Cialdini & Ascani, 1976; Foss & Dempsey, 1979; Bagozzi, 1981; Piliavin, Callero & Evans, 1982; Lipsitz, Kallmeyer, Ferguson & Abas, 1989; Ferrari & Leippe, 1992; Nonis, Ford, Logan & Hudson, 1996). More importantly, we reiterate that the purpose of this study

was to replicate Giles and Cairns' (1995) study, and to compare the differences between two approaches, rather than to generalise the results to a wider population.

This study used one self-completion questionnaire, which included questions based on each of the two approaches. The Labaw behavioural type questions were asked first, followed by the theory of planned behaviour attitudinal questions. The Labaw questions included knowledge questions that required open-ended responses. All other questions required the respondents to circle one or more responses. All theory of planned behaviour questions involved a response to a seven-point semantic differential scale. Environmental and demographic questions were asked at the end of the questionnaire.

Interviewing took place one week before a scheduled campus visit by the New Zealand Blood Service (NZBS). To assess willingness to donate blood the following week, the questionnaire included a probability question and two intention questions. The dependent variable that provided the best fit to the predictor variables collected was used in the final analysis.

Respondents were asked whether they were willing to provide contact details should the interviewer have any further questions at a later date. Respondents who provided their contact details were contacted by phone or email one week after the blood drive and asked whether they had donated blood when the NZBS had visited the campus the previous week. Whilst it is not possible to quantify the potential sensitising effect on behaviour the request for contact details and the subsequent follow up contact may have had, the anecdotal evidence is that respondents were truthful in their responses. Many non-donors volunteered information regarding their failure to donate. This was particularly apparent with those who had indicated a strong likelihood of donating blood and then wanted to explain the reason for their failure to act, even though this information was not directly sought. This finding is consistent with that reported by Giles and Cairns (1995) who also contacted respondents a week after the blood drive. Furthermore, if respondents were sensitised by the research process, the predictive ability of both approaches tested would be equally affected.

Follow-up contact gave a sample size of 40 for analysing reported behaviour. Whilst the sample was too small to report any definitive results about donor behaviour, nevertheless it allowed some conclusions to be drawn about the direction of future research in this area.

Table 1. Behavioural Intentions

	Giles and Cairns Study N = 141	Current Study N = 100	
Variables		TPB	Labaw
PBC	.608***	.612***	–
Subjective Norm	.114**	.191**	–
Attitude	.253***	.093	
Donor Status	–	–	.711***
Donation Freq.	–	–	-.372**
Visit Awareness	–	–	-.162*
R^2	.60	.52	.21

*** significant at 1% level
** significant at 5% level
* significant at 10% level

5. Results

The predictive ability of Ajzen's theory of planned behaviour and Labaw's approach was compared, investigating both behavioural intentions and reported donation behaviour as the dependent variables. Table 1 presents the R^2 and Beta values for behavioural intentions from regression analyses of both the original study by Giles and Cairns, and the authors' replication study.

The R^2 values for both the Giles and Cairns study and the current study were similar, with $R^2 = .60$ reported for the original study compared with $R^2 = .52$ for our replication study. Furthermore, for both studies, perceived behavioural control (PBC) was a better explanatory variable than the other two theory of planned behaviour variables, attitude and subjective norm. By contrast, attitude was a better explanatory variable than subjective norm for the original study, but these findings were reversed for our replication study.

The findings of our study support the earlier study by Giles and Cairns (1995), which concluded that motivation to donate blood is influenced by the perception of control or "perceived self-efficacy". Thus the theory of planned behaviour, which includes the PBC variable, is a better predictor of blood donation behaviour than the theory of reasoned action which does not include the PBC variable.

Comparison of the theory of planned behaviour variables and Labaw's (1980) approach found that the theory of planned behaviour variables were better predictors of behavioural intentions than the Labaw variables, with R^2 values of .60 and .52, for the theory of planned behaviour studies, compared with .21 for the Labaw approach.

The analysis was then repeated using reported donation behaviour as the dependent variable. The results are shown in Table 2. This analysis produced an R^2 of .35 for the Labaw approach compared with .19 for the theory of planned behaviour variables. (Whilst Giles and Cairns reported collecting reported donation behaviour data, their results for this measure were not included in their analysis.)

Step-wise regression produced different explanatory Labaw variables for predicting reported donation behaviour compared with predicting behavioural intentions. For reported donation behaviour, three

Table 2. Reported Behaviour

	Giles and Cairns Study N = 100	
Variables	TPB	Labaw
PBC	.413**	–
Subjective Norm	.235	–
Attitude	-.132	–
Last Donation	–	.460***
Education Level	–	-.302**
Family Member	–	-.226*
R^2	.19	.35

*** significant at 1% level
** significant at 5% level
* significant at 10% level

variables, last donation (number of months lapsed since last donation), education level (educational qualifications), and family member (donor has a family member who has donated blood), provided the best fit. Not surprisingly, the last donation variable provided the greatest explanatory power. That is, the longer it has been since a respondent's last donation, the less likely he or she is to donate blood again. It is less clear why a negative correlation was found between education level and blood donation. Possible explanations are that education is highly correlated with another variable such as age, which is also negatively correlated with blood donation, or that the effect is due to lack of variance in the data (because of the nature of the sample selected).

The theory of planned behaviour variable perceived behavioural control was the best explanatory variable for reported donation behaviour, as it was for behavioural intentions. In an attempt to improve the fit of the theory of planned behaviour model, indirect measures of attitude, subjective norm and perceived behavioural control, commonly included in similar studies, were analysed in addition to the direct measures reported in Table 1. However, these variables provided a poorer prediction of behavioural intentions than the direct measures. Furthermore, no correlation was found between indirect measures of the theory of planned behaviour and reported donation behaviour. In a further attempt to improve the fit of the theory of planned behaviour indirect measures, the analysis was repeated after rescaling the uni-polar semantic differential scales used in the questionnaire, to bi-polar scales. This rescaling procedure did not improve the predictive ability of the indirect variables.

6. Discussion and Conclusions

The study reported here produced results similar to the Giles and Cairns (1995) study it set out to replicate. This suggests that it successfully tested the theory of planned behaviour, even though the sample size used was relatively small. The sample of respondents on which reported donation behaviour was collected was too small to draw anything but tentative conclusions. Nevertheless, the implication of the study is clear: attitudes predict intentions better than environment, knowledge and behaviour, but the latter are better predictors of behaviour. Given that it is behaviour not intentions that we are ultimately interested in, this is an important conclusion.

Attitude-based models such as the theory of planned behaviour, which underpin much of the traditional thinking in social marketing, rely on the assumption that behavioural intentions are highly correlated with actual behaviour. The blood donation study reported here merely confirms what has been observed many times before, that attitudes are not good predictors of behaviour. Labaw's approach to predicting behaviour eschews the use of attitudes, proposing instead variables that measure the environment, knowledge and behaviour of the people concerned. In our blood donation study, Labaw's approach was better at predicting reported behaviour than the theory of planned behaviour. In absolute terms the Labaw approach was not particularly successful, nevertheless, its results were promising enough to suggest that this approach merits further study.

The significance of the study reported lies in its operationalisation of Labaw's framework and its implicit assumption that there is a better way of predicting behaviour than traditional cognitive approaches. This suggestion has important managerial implications. Instead of devoting effort to measures designed to change potential donors' attitudes to blood donation (on the assumption that this will lead to more donors or donations), emphasis should instead be placed on aspects of potential donors' knowledge, environment and behaviour that are known to be related to donor behaviour. For example, if the fact that having a family member who has been a donor is a significant predictor of blood donation, donors could be explicitly encouraged to "recruit" family members as new donors.

The alternative perspective proposed by Labaw is not, of course, limited to blood donation; her model is equally applicable to any form of social behaviour. The environment, knowledge, behaviour framework has to be specifically tailored for each situation; what works for blood donation will not necessarily work for donation to charity, or for organ donation. However, the fundamental principles of Labaw's behavioural approach are completely generalisable.

Cognitive models of behaviour such as the theory of planned behaviour have been the subject of much study and refinement over a long period of time. Despite this, their ability to predict behaviour is relatively poor. Rather than continuing to extend these models in the hope of improving their predictive ability, we suggest it is time to consider alternative approaches such as the one proposed by Labaw. This paper represents a first step in that direction.

Whilst the results of this study provide some support for Labaw's approach to predicting behaviour, additional

research is needed to test further its explanatory power and to refine the operationalisation of this approach. In particular, obtaining a larger sample size to examine donation behaviour would improve the reliability of the findings reported here. Furthermore, in order to generalise the results to a wider population, it would be necessary to use a systematic selection process to obtain the survey sample.

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