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# **COMPARISON OF TWO APPROACHES TO PREDICTING BLOOD DONATION BEHAVIOUR**

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**A thesis presented in partial fulfilment  
of the requirements for the degree of**

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## ABSTRACT

Understanding and predicting human behaviour has been of particular interest to marketers for many years. The predominant approach to predicting behaviour has relied on attitude-based models; in particular, Ajzen's (1985) theory of planned behaviour is considered the most sophisticated methodology available to researchers for behavioural prediction. However, despite much study and refinement, the predictive ability of such models remains relatively poor. Rather than continuing to rely on cognitive models, it is time to consider alternative approaches to predicting behaviour.

Labaw (1980) offers one such alternative approach based on information about respondents' environment, knowledge and past behaviour. 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, at least theoretically, have verifiable answers, has greater predictive ability than Ajzen's theory of planned behaviour, based on attitudinal questions.

This study compared the predictive ability of Ajzen's attitudinal-based theory of planned behaviour with Labaw's behavioural approach, in the context of blood donation behaviour. In absolute terms, the predictive ability of the two approaches was equivalent; however, Labaw's approach was superior to the theory of planned behaviour from a survey research perspective. Thus, Labaw's approach presents a feasible alternative to attitudinal-based approaches to predicting behaviour.

This study also found that behavioural intention to donate blood was a poor predictor of actual (self-reported) donation behaviour. This finding is important given the widely-accepted assumption that the best prediction of behaviour is provided by measures of behavioural intention. In addition, the study suggests that researchers need to carefully consider the time interval selected to test the predictive ability of a model if the results are to have any practical relevance.

Variables that help explain the decision to donate blood were also identified. These findings offer blood collection agencies guidance with formulating specific strategies to

address blood donor shortages. However, accurately predicting who is most likely to donate blood remains problematic, and further research is needed to extend the results reported in this study.

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# 1. INTRODUCTION

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## 1.1 BACKGROUND

The predominant approach to understanding and predicting human behaviour is based on the assumption that knowledge of attitudes is important. On the basis of this assumption, Ajzen and Fishbein have developed a conceptual framework for predicting behaviour in which attitude is the central concept. In particular, Ajzen's (1985) theory of planned behaviour (TPB) is considered the most sophisticated method available to researchers to predict human behaviour. However, some weaknesses and limitations have been identified with this attitudinal approach. Nevertheless, despite behaviour theorists' criticism of researchers' continued reliance on the attitudinal approach, few studies have investigated different paradigms.

A less commonly accepted approach to predicting human behaviour posits that explanations for behaviour may lie in events that happen in the environment rather than within the individual. Labaw's (1980) behavioural approach to predicting behaviour involves asking questions that have a verifiable answer, in contrast to questions based on internal thoughts and feelings about an action. Whilst this alternative approach to predicting behaviour has not been widely tested and operationalised, it presents a feasible alternative to attitude-based approaches, and potentially addresses a number of weaknesses identified in these approaches.

While alternative approaches to predicting behaviour are of interest academically, there is a more fundamental reason for examining them. In practice, knowing how to moderate some behaviours would help to achieve desirable social goals. One example is the behaviour of blood donation.

New Zealand shares a common problem with other countries: a shortage of blood donors. Less than 5% of New Zealand's total population donate blood each year, yet over 80% of New Zealanders may need a blood product in their lifetime ([www.nzblood.co.nz](http://www.nzblood.co.nz)). Tighter screening of blood donors in recent years has further

eroded the pool of potential blood donors. Corresponding with this situation, demand from the health system for whole blood and blood products has increased, leading to a shortage of active blood donors in New Zealand and worldwide.

Many studies have tried to explain why few people become regular committed blood donors, yet there has been little success in accurately predicting willingness to donate blood. Greater knowledge of which variables are most likely to predict potential donors' behaviour would help to ensure that efforts to increase the number of blood donors were effectively directed.

## **1.2 OBJECTIVES**

The overall aim of this research was to examine the predictive ability of two approaches to predicting willingness to donate blood. More specifically, the purpose of this study was to consider whether, as a general principle when attempting to predict behaviour, attitude questions should be replaced with questions that have verifiable answers about respondents' environment, knowledge and past behaviour. The broad aim of this study was further divided into several more specific research objectives, outlined below:

1. To compare the predictive ability of Labaw's behavioural approach to predicting blood donation behaviour with that of Ajzen's attitudinal based theory of planned behaviour. This objective was addressed by developing a questionnaire that incorporated questions based on each approach.
2. To investigate the correspondence between behavioural intention and actual (self-reported) behaviour. This objective was achieved by asking respondents to state their intention to donate blood when the New Zealand Blood Service's mobile blood drive visited their tertiary campus. These estimates were compared with actual (self-reported) behaviour obtained following the mobile blood drive.
3. To establish methodology to operationalise Labaw's approach to predicting behaviour. This involved developing guidelines for designing questions about

respondents' environment, knowledge and past behaviour that, at least theoretically, have verifiable answers. Labaw refers to these as questions respondents can truthfully answer.

4. To identify the variables that offer the best understanding and prediction of potential donors' willingness to donate blood. Regression analysis was used to identify these variables.

### **1.3 OUTLINE OF THE THESIS**

This section provides an overview of the entire thesis. Specifically, the purpose and contribution of each chapter is explained as follows:

*Chapter two* provides an outline of the direction previous blood donation research has taken to date. This chapter examines three strands of blood donation research: first, a comparison of the demographic characteristics and personality traits of donors and non-donors; second, the reasons that motivate those who give blood, and the factors that deter those who do not; and third, acquiring a greater understanding of the effect of donor experience on long-term donation behaviour. This chapter incorporates the main conclusions reached by previous comprehensive reviews of the blood donation literature and uses specific studies to illustrate various findings related to the research strands outlined above. In essence, the purpose of this chapter is to document previous attempts to address the problem of insufficient blood donors to meet demand for blood, and to identify remaining gaps in research knowledge with a view to solving this problem.

*Chapter three* discusses approaches to predicting human behaviour, including the behaviour of interest to this study, blood donation. The main aim of this chapter is to examine success to date with behavioural predictions and to consider whether accuracy could be improved. This chapter begins by exploring the predominant research approach to predicting behaviour in which attitude forms the basis of behavioural predictions. Ajzen and Fishbein's conceptual framework is explained and predictive models based on their conceptual framework are detailed and discussed. Next, this chapter presents an alternative, and less commonly accepted approach to predicting

behaviour, in which behavioural variables form the basis of predictions of future behaviour. Labaw's foundation for a systematic theory of questionnaire design for the purpose of predicting behaviour is outlined.

*Chapter four* details the questionnaire design and survey methodology that was developed to address the research objectives, and presents the findings of preliminary research undertaken to test the survey methodology. This chapter begins by explaining the issues associated with developing appropriate questions based on Ajzen's (1985) theory of planned behaviour, and Labaw's (1980) approach to questionnaire design. Next, this chapter presents details of a pilot study undertaken to develop, test and refine various aspects of the survey methodology and questionnaire design, prior to commencing the major study.

*Chapter five* presents the results of a major study undertaken to address the research objectives detailed in the previous section. This chapter compares the ability of Ajzen's theory of planned behaviour and Labaw's approach to predicting willingness to donate blood. Predictions of respondents' behavioural intentions to donate blood and their actual (self-reported) blood donation behaviour are detailed. Discussion is also provided of the relative importance of selected variables used in this study to predict blood donation behaviour. In addition, the chapter explains how the findings of this study fit within the context of previous related studies.

Finally, *chapter six* summarises the key findings of this study. A brief review of the study's limitations is provided and suggestions for future research are made.

## **1.4 SUMMARY**

Despite numerous attempts by researchers, the question of how best to predict human behaviour, and of particular interest to this study, how to predict willingness to donate blood, has not yet been answered. The research described in this thesis was designed to explore whether an alternative approach to the attitudinal paradigm that presently dominates academic-led behavioural research could improve predictions of blood donation behaviour. To achieve this objective, the predictive abilities of two

approaches to predicting intentions to donate blood, and actual (self-reported) blood donation behaviour, were examined: Ajzen's (1985) theory of planned behaviour based on attitudinal variables, and Labaw's (1980) approach based on behavioural variables.

The study was conducted in two stages. First, a pilot study was undertaken for the purpose of testing the research methodology. The pilot study was followed by a major study in which data was collected over a two-year period. Intentions to donate blood were obtained from respondents at several tertiary campuses in New Zealand prior to mobile blood collection drives undertaken by the New Zealand Blood Service. Respondents' behavioural intentions were compared with their actual (self-reported) behaviour obtained shortly after the mobile drive visit had taken place.

The results of the study are considered from two perspectives: first, in terms of the contribution made to the body of knowledge on predicting human behaviour and, second, for the purpose of providing information to assist blood collection agencies to formulate specific strategies aimed at attracting and retaining blood donors.

## 2. BLOOD DONATION

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### 2.1 INTRODUCTION

Health services are dependent on safe and readily available supplies of blood to help save lives. However, tighter screening of blood donors in recent years has led to a decrease in the volume of blood collected. For example, New Zealand's pool of potential blood donors has been reduced by the onset of the AIDS epidemic in the 1980s, and the introduction of screening donors for Hepatitis. More recently, since February 2000, New Zealand's pool of potential donors has been further reduced by the risk of blood contaminated with Creutzfeldt-Jakob Disease (C.J.D); people who have spent a total of six months or more in the United Kingdom between 1 January 1980 and 31 December 1996 are no longer eligible to give blood. Youth fashion has also had an adverse effect on blood supplies as potential donors who have undergone body piercing or tattooing are barred from donating blood for six months, because of the potential health risks associated with these practices.

Despite the fact that the volume of blood collected has fallen, the demand for whole blood and blood products is increasing, at a rate higher than the collection rate (James and Matthews, 1996; Gillespie and Hillyer, 2002). This is partly a result of a greater use of blood products to treat medical conditions such as cancer. For example, Leukaemia patients can use up to 700 donations over the course of their treatment (Barkworth, Hibbert, Home and Tagg, 2002). There have also been advances in medical and surgical techniques, and new uses have been found for blood products; for example, to treat medical conditions associated with aging (Ibrahim and Mobley, 1993; Barkworth *et al.*, 2002). Unfortunately, worldwide there is a shortage of active blood donors to meet the increased demand for blood.

New Zealand has approximately 200,000 registered donors, which equates to less than 5% of the population. Similar donor population percentages are reported for other countries including the United States of America, the United Kingdom, and Australia (Royse, 1999; Armitage and Conner, 2001a; Barkworth *et al.*, 2002; Gillespie and

Hillyer, 2002; Reid and Wood, 2002). In all of these countries, including New Zealand, there is an apparent reluctance of eligible donors to donate, and blood collection agencies have experienced only limited success in attracting new donors. Moreover, most donors are not regular donors. Thus, most of the blood given is donated by a small minority of regular, repeat donors (Piliavin, 1990; Gillespie and Hillyer, 2002).

The amount 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 agencies 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.

To ascertain current knowledge about blood donation behaviour, this chapter reviews the direction previous blood donation research has taken to date. In particular, this chapter examines the effects of donor characteristics, donor motivation, and donor experience on blood donation behaviour.

## **2.2 BLOOD DONATION BEHAVIOUR**

Previous comprehensive reviews of the blood donation literature, first by Oswalt (1977), and later by Piliavin (1990), reveal research on blood donation behaviour has taken one of three directions. One research direction has been to compare the demographic characteristics and personality traits of donors and non-donors. A second research direction that many previous studies on blood donation have investigated is the reasons that motivate those who give blood, and the factors that deter those who do not. A third research direction has focussed on acquiring a greater understanding of the effect of donor experience on long-term donation behaviour. In particular, this third research direction has considered what motivates first-time donors to develop a donation habit leading to them becoming regular, committed donors.

### 2.2.1 Donor Characteristics

Concurrent with the developing problem of blood supply has been a corresponding increase in investigations of how blood donors differ from non-donors in terms of differences in their demographic and psychographic characteristics. The following demographic characteristics have been investigated: age, gender, marital status, ethnicity, education and income.

A review of blood donation studies by Piliavin (1990) concluded that most donors were aged between 25 and 45 years. These findings are consistent with 1999 data obtained from the New Zealand Blood Service (NZBS) of donors in the Manawatu district, which showed that 64% of registered donors were aged between 20 and 49 years (see Appendix A). Moreover, a review of the psychological literature on blood donation led Ferguson (1996) to conclude that age is inversely predictive of future donor behaviour. That is, younger donors are more likely to be repeat donors than older donors. This finding is not surprising as health issues are commonly associated with discontinuing as a blood donor, and as people age, they are more likely to be affected by medical conditions which make them ineligible to donate blood.

Investigations of gender effects on blood donation behaviour indicate that demographic changes have occurred in blood donation trends over the years. Earlier studies reported that, in general, males were more likely to donate blood than females. For example, in nine early studies that Oswalt (1977) reviewed for gender effects, men represented 66% to 91% percent of the donor samples. However, there have been reports of increased numbers of female donors in more recent years (Piliavin and Callero, 1991; Gillespie and Hillyer, 2002). These reports are supported by recent data obtained from the NZBS, which showed a slightly higher proportion of registered female donors at 52%, compared to 48% of males (see Appendix A). Some cultural changes that may partly explain the increase in female donors since Oswalt's earlier findings include the fact women are now having fewer children, which means their donation history is less interrupted than in previous years, and consequently that they can donate more often. Increases in the number of women entering the workforce over the years has also provided women with greater opportunity to donate blood by attending mobile blood collection drives, which regularly visit workplaces.

Although women are as likely as men to be first time donors, women are less likely to continue donating blood after the initial donation, and are less likely than men to be multiple donors (Burnett and Leigh, 1986). In addition to childbearing issues associated with blood donation eligibility, another factor affecting female donors is that donating depletes iron stores, and a depleted iron store is a reason for being deferred from donating blood (Piliavin, 1990). In turn, deferral is a recognised cause of loss of interest in returning to the blood donation centres (Piliavin and Callero, 1991).

It is also acknowledged that female donors are more likely than male donors to report having suffered a negative reaction of some type, including dizziness and fainting (Piliavin and Callero, 1991; Sojka and Sojka, 2003). In addition, Piliavin and Callero report that women are usually more nervous than men before donating, more anxious during donation, and more likely to feel they should not give blood, or can only give with difficulty. This may of course be due to differences in reporting as opposed to real gender differences in donation behaviour, as it is also reported that women usually express more positive feelings after donation than do men, evaluate the staff as being more personal, and are more certain about their continued donation behaviour (*ibid.*).

Earlier studies have also reported that blood donors are more likely to be married than non-donors (Oswalt, 1977; Boe and Ponder, 1981; Piliavin, 1990; Ibrahim and Mobley, 1993). However, the relevance of marriage as a predictor characteristic needs to be considered carefully due to changes in family trends in recent years, which include an increase in *de facto* and single-parent families, and a trend towards marrying later. Moreover, it is also reported that first time donors tend to be younger, and hence less likely to be married. Ibrahim and Mobley also report that donors who have more than one child are more likely to donate blood. However, it is not clear from their findings whether this characteristic applies equally to both men and women. This is unlikely considering donor eligibility issues associated with female donors only, as discussed above.

Donors' ethnicity has also been considered as a predictive characteristic of donation behaviour. Piliavin and Callero (1991) reported that 95% of all USA blood donors are Caucasian. Thus, they concluded that an increase in donations by ethnic minorities could significantly increase the nation's blood supply. However, the over-

representation of Caucasian donors may not be due to ethnic differences *per se*, but due instead to other related variables such as education levels and socio-economic status. For example, a study by Oswalt and Gordon (1993) found there did not appear to be any inherent differences in the positive and negative motivations of the general population and minority groups. However, their study was carried out using college minority respondents, who may differ from non-college minority respondents. To date there is no conclusive evidence of the ability of ethnicity *per se* to predict blood donation behaviour (Piliavin, 1990).

Researchers have also considered donors' income and donors' education levels in relation to predicting blood donation behaviour. It has been reported that frequent blood donors have a higher level of income than non-donors (Piliavin and Callero, 1991). For example, in wealthy Baltimore, USA, when previously paid professional donors were converted to voluntary participation when payment was phased out, 73% continued to donate. However, when a similar changeover occurred in less wealthy New Mexico, almost 100% of the previously paid donors ceased to donate (Piliavin, 1990). A 1986 study of 15 USA blood centre areas found that frequent donors' incomes were approximately 30% higher than non-donors' incomes (Needham Harper Worldwide; cited in Piliavin and Callero, 1991). This study also found that frequent donors were better educated than occasional or non-donors.

Donors' education status has been considered by other researchers, including Ibrahim and Mobley (1993), who examined donor characteristics among donors who had given blood within the previous year. Their study found that education level was a strong predictor of blood donation behaviour. Similarly, a Canadian study found that 60% of donors had some higher education, compared with only 20% of Toronto's general population (Lightman, 1981). A study by Burnett (1981), which compared donors and non-donors, also found that donors are more likely to be highly educated. However, a subsequent study by Burnett and Leigh (1986), which investigated donation frequency amongst current donors, did not find education to be predictive of blood donation behaviour.

Additional findings on the effect of education and income on donation behaviour have not been consistent. For example, two studies reviewed by Piliavin and Callero (1991)

found that the majority of heavy donors were employed in the areas of sales and service, which are not typically considered higher income occupations or associated with higher levels of education. Furthermore, Hollingsworth and Wildman's (2004) examination of Australian blood donation data for the State of Victoria found no statistical significance for the characteristics education and higher income (over A\$600 per week). Given the lack of conclusive findings on education as a predictor variable, and the difficulty of disentangling the interaction between education and income, the predictive ability of these variables should be treated with caution.

Not surprisingly, Piliavin and Callero (1991) concluded that there are no easily identifiable characteristics of individuals that can readily predict who will become a regular, altruistic blood donor. Although differences in demographic characteristics between blood donors and non-donors have been reported in previous studies, generally evidence suggests that demographic factors alone are insufficient to predict willingness to donate blood. Moreover, early findings on the predictability of demographic variables should be treated with caution as the demographics of blood donors have been changing over time, as have corresponding changes in blood collection philosophy and practices (detailed in the next section).

In addition to the studies that have investigated donors' demographic characteristics, further studies have investigated donors' psychographic characteristics. Thus, researchers have attempted to provide a personality profile of the typical donor as a guide to recruitment. Some of the large variety of personality characteristics linked to blood donation behaviour in Piliavin's 1990 review of the blood donation literature include: a desire for self-sacrifice; a strong need for recognition and prestige; high energy levels; a greater propensity for original thinking; a lack of self-esteem; less willingness to take risks; a greater concern with personal and family health; strong religious convictions; a more conservative nature; more sensation-seeking; and a greater willingness to try anything once. Although numerous personality characteristics have been reported, Piliavin concluded that no clear picture has emerged to identify a 'typical' donor or potential donor. Not all findings are in the same direction, and the personality traits investigated lack uniform definitions. Clearly, further investigations of the predictability of psychographic variables are likely to be hampered by the difficulty associated with isolating and measuring such indeterminate variables.

Arguably, therefore, further studies focussed on this particular research direction are unlikely to advance current knowledge of blood donation behaviour.

### **2.2.2 Donor Motivation**

It was earlier agreed that there was an obvious need for blood collection agencies to gain as much information as possible about both positive and negative effects on donor motivation to donate blood (Oswalt, 1977). Correspondingly, many of the previous studies on blood donation have concentrated on the attitudes and motivations of those who give blood, and the factors that deter those who do not (Piliavin, 1990).

Donors' reasons for donating can be divided into two basic categories. The first category is extrinsic motives, namely, reasons that are based in the actions of others, such as monetary payment, rewards and incentives, and social pressure. For example, extrinsic reasons donors have given for donating blood include payment, time off work, a free medical test and to obtain information about their blood group (Piliavin and Callero, 1991).

The second category of reasons for donating blood is intrinsic motives, that is, reasons that come from within and relate to values, interests and one's sense of social responsibility. For example, studies have found that intrinsic motives for giving include emotional gratification, heightened self-esteem and personal satisfaction (Oswalt, 1977; Lightman, 1981; Piliavin, 1990).

This section will first consider extrinsic motives associated with blood donation, followed by a discussion of donors' intrinsic motives for donating blood, and lastly, reasons commonly cited for not donating blood will be detailed.

#### ***Extrinsic Motives to Act***

Before the mid-1970s, blood collection in the USA mostly came from paid donors or from donors in insurance-based schemes. In 1973, the USA Department of Health, Education and Welfare introduced the National Blood Policy, which strongly discouraged the sale of blood and encouraged altruistic donation of blood. This change

in policy was largely in response to the book, *The Gift Relationship*, by Richard Titmuss (1970). Titmuss compared blood donation in the UK and the USA, and in particular, compared altruistic (voluntary) donation, which was common in the UK, with donation in return for payment, which was the most common system used in the USA.

Titmuss argued that payment for blood was a more expensive system that resulted in greater waste of blood due to a high number of donations from unsuitable donors. For example, Titmuss cited statistics to show higher incidences of hepatitis occurred after transfusion in the USA, compared to the UK; the inference being that payment for blood led to donors being less than truthful about their health. As a result, purchased blood was less safe than donated blood. Hence, the vast majority of blood now collected in the USA comes from volunteers (Royse, 1999).

At the time Titmuss' book was released, some donations in the USA were made as blood credits, in case the donor or the donor's family needed a later transfusion. Some insurance systems operated on an 'individual responsibility', or no pay, basis if the blood recipients later repaid their use of donated blood by donating a specified amount themselves. Because such non-replacement fees also provided a motivation to be untruthful about one's health, today insurance-based systems in the USA have largely changed to the 'community responsibility' philosophy by using an unpaid volunteer system. In other countries, including New Zealand, Australia and the UK, the community responsibility philosophy is used exclusively, with no monetary incentives at all offered to donors.

Following her review of the blood donation literature, Piliavin (1990) concluded that because donors today are motivated differently than they were when monetary incentives were offered, much of the earlier research on blood donation, published prior to the change in blood collection policy, is now obsolete. Thus, whilst the continued reliance on non-paid donors has recently been questioned (see von Schubert, 1994; Jones, Prasad, Kuruvatti, Tahir, Whitaker and Dawson *et al.*, 2003), additional research into the merits of using monetary incentives to encourage donation is no longer relevant because collecting blood from paid volunteers is currently regarded as undesirable and would not be used in practice by blood collection agencies (Keown, 1997).

Researchers have also examined the effect of other forms of rewards and incentives on blood donation behaviour. For example, Condie, Warner and Gillman (1976) and later, Ferrari, Barone, Jason and Rose (1986) found the offer of a free medical examination was effective in encouraging first time blood donation. This finding was supported by a Dutch study that also found a free medical examination served as a strong incentive to donate blood for the first time (Staalekker, Stammeijer and Dudok de Wit, 1980; cited in Piliavin, 1990). However, the latter study found that a number of those donors later discontinued donation stating that the free medical examination was not a sufficient incentive to maintain their interest in continuing donating beyond the initial donation. Moreover, Piliavin (1990) reports two studies that found some success in using on-site cholesterol testing as an incentive to donate blood, however, it was not reported whether this incentive to donate worked beyond the initial free test.

Other studies that have focussed on the effect of rewards and incentives on donor motivation report mixed results. Oswalt (1977) concluded that in general a reward did not appear to be a major motivator for donating blood. However, some success in the use of rewards and incentives to increase blood donation rates has been reported. For example, a study by Jason, Jackson, and Obradovic (1986) found that incentives, competitions, and raffles obtained a 63% increase in units collected from people who attended worksite blood donor drives compared to participating drives by blood services that did not offer incentives.

Similarly, Ferrari *et al.* (1986) found that the offer of a personal reward (coupons redeemable at local retailers for free or reduced-price merchandise) was more effective at encouraging blood donation than a simple, altruistically based request to donate blood. Sixty one percent of respondents in this study who were offered the incentive attended a blood drive, versus 29% who were not provided with this inducement. However, it was noted that whilst a significant difference was detected for first-time donors, this finding was not obtained for repeat donors, indicating that although incentives appeared to motivate first-time donors to attend the mobile drive, incentives were less effective at encouraging repeat donations.

Nonis, Ford, Logan and Hudson (1996) also investigated the effect of incentives on donors' willingness to donate blood. Their study detected a difference between donors

and non-donors in their likelihood of donating blood based on five different non-monetary incentives.<sup>3</sup> However, in contrast to the findings reported above, for each of the incentives offered in this study, those who had donated blood on a prior occasion were more likely to donate in response to the incentive, than those who had no prior donation experience. That is, unlike previous studies in which incentives were more effective at encouraging first time donation than repeat donation, this study found incentives were more effective at encouraging repeat donation.

Perhaps not surprisingly, Piliavin (1990) concluded that, in general, findings on incentives for increasing willingness to donate blood are contradictory. It is also important to note that whilst rewards may be effective in encouraging first time donation, and motivating donors who are poorly motivated, rewards or incentives may actually be counter-productive and lead to people being less likely to help or respond in the future. For example, it has been reported that a high reward actually decreased donations from donors who were already motivated (Upton, 1974; cited in Piliavin and Callero, 1991). In other words, if the reward is too high, altruistic donors may be offended; if it is too low, incentive seekers are not motivated. Furthermore, the offer of rewards may interfere with the development of intrinsic motivation and, worse, may induce individuals at risk of disease to donate (Rapport and Maggs, 2002). Thus, since most countries now have a system where blood is collected from purely volunteer donors, attempts should be made to identify factors other than incentives to encourage blood donation, to help recruit and maintain a voluntary donor pool.

Another extrinsic motive researchers have investigated is the effect of conformance to social pressure on people's willingness to donate blood (Piliavin and Callero, 1991). Drake, Finkelstein and Sapolsky (1982) argued that a higher proportion of eligible donors will donate when there is a great deal of social pressure to do so, or a strong desire to conform to the expectations or desires of an individual or group. This feeling of social pressure is referred to as an intense collection environment. In these intense settings donors must make a conscious decision not to donate. For example, Rushton and Campbell (1977) investigated the effect of modelling on the decision to donate blood. Specifically, they studied the effect that exposure to altruistic behaviour would have on the behaviour of others. The study involved the use of a confederate to act as a

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<sup>3</sup> Bonus points for a course, a t-shirt, the promise of free blood when necessary, coupons and discounts at local stores or restaurants, and a donor attendance based competition between student groups.

role model by agreeing to donate blood, with the subject being asked next to donate blood. When the confederate agreed first, 67% of subjects agreed to donate blood when asked, and 33% of those actually donated. When the subjects were asked first, only 25% agreed to donate blood and none actually donated. This finding suggests that the influence of others is an important factor in the decision to donate blood.

Persuasion or external influence from family members or friends is also believed to influence the decision process that leads to most first-time donors going into the blood collection centre (Oswalt, 1977; Drake *et al.*, 1982; Barkworth *et al.*, 2002). For example, a survey by Piliavin and Callero (1991) found that almost 60% of first-time college donors reported a family member to be a donor, and about 30% said their blood donor relative gave regularly. Furthermore, 35% of those first-time donors who reported they had a friend or relative who had received a blood transfusion were more likely to donate blood. These findings suggest that an awareness of blood needs, and a family tradition of blood donation, may be extrinsic factors that contribute to the decision to donate for the first time.

Regular contact with donors by blood collection agencies is also believed to improve donation rates (Oswalt and Napoliello, 1974). For example, Ferrari *et al.* (1986) performed a study, which examined the effect of telephone reminders on donation behaviour. First, participants were asked to commit themselves to donate blood on a specified date and later they received a telephone reminder one or two nights before the agreed donation date. This technique was found to increase the likelihood that the appointment would be kept when compared to participants who received no reminder.

A Canadian study investigated the impact of variation in reminder calls on donor return (Wiesenthal and Spindel, 1989). This study tested donor response to five conditions in which donors were reminded by telephone to donate blood. For each condition the amount of information provided along with the request to donate blood varied.<sup>4</sup> Overall, response in the form of actual blood donations made within six months of the reminder was generally low - 30% to 52% across the five conditions - (40 previous blood donors assigned to each condition). The highest donor return rate was in response

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<sup>4</sup> Schedule information only; schedule information plus praise; schedule information and information on blood's uses; schedule information, plus praise, plus information on blood's uses; no reminder call.

to a reminder in which schedule information only was provided. The lowest response was gained from schedule information plus praise. Interestingly, overall, there was little difference in effect between the control condition (no reminder) and any of the experimental conditions. This finding suggests that whilst a reminder to donate blood may increase the likelihood that a potential donor will donate blood, providing additional information about the blood donation process, or offering praise for the donor's intended act, does not appear to increase the likelihood that a donor will donate blood. However, this suggestion is not supported by Sarason, Sarason, Slichter, Beatty, Meyer and Bolgiano (1993), who found that sending a letter of appreciation to people who had donated blood and praising them for this act led to greater support to join the bone-marrow registry than blood donors who only received a bone-marrow information leaflet.

Increasing the degree of personal contact with donors is also believed to increase willingness to donate blood. For example, one study investigated donor retention involving 180 first time donors who donated blood in response to an emergency appeal (Freiburger and George; cited in Piliavin, 1990). The experimental group first received a personalised thank you letter, followed by a postcard reminder to donate again, and then were telephoned to set up an appointment for the next donation. The control group received only the thank you letter. Thirty three percent of the experimental group, compared to 11% of the control group returned for a second donation within four and a half months. This finding supports the suggestion that greater personal contact may be a persuasive motivator, at least for newer donors. Of course, whilst this finding supports blood donation centres making greater effort to maintain contact with potential donors, the cost factors involved in multiple contacts may inhibit this practice.

Some studies report that the use of face-to-face requests to donate blood are highly effective (Jason, Rose, Ferrari and Barone, 1984; Piliavin, 1990). However, it is important to note that whilst face-to-face reminders may be more effective at encouraging repeat donation than say, mail reminders, this technique is unlikely to be sufficiently cost effective for blood collection agencies to adopt extensively in practice.

Attribution theory has also been investigated in an attempt to attract new blood donors. Attribution theory suggests that, other things being equal, if we perceive that we have

taken an action ourselves, that is without it being due to external coercion or large reward, we are likely to attribute to ourselves a predisposition towards that action. Then, after we have attributed that tendency to ourselves, we will be more likely to act in a consistent way with that attribution in the future (Paulhus, Shaffer and Downing, 1977; Piliavin, 1990).

Two techniques based on attribution theory that have been used in an attempt to recruit blood donors are the foot-in-the-door, and the door-in-the-face techniques (Piliavin, 1990). The foot-in-the-door technique involves first making a small request, then following that with a larger critical request. For example, asking someone first to display a recruitment poster, then secondly, asking for a blood donation. The theory suggests that if people comply with the first request, they will define themselves as someone who is willing to help, and will then comply with the second request to maintain that self-perception.

The door-in-the-face technique involves making an initial request that is so large that it will very likely be refused, then following this request with a much lesser one. The theory is that after the person has refused the first request, they feel less helpful, but by accepting the second request, their initial belief in themselves as an altruist is restored. For example, if they refuse the first request, which asks them to commit to being a long-term donor, but accept the second request to make a single donation, they have restored their sense of altruism.

Cialdini and Ascani (1976) report a study based on attribution theory in which participants (college students) were approached the day before a scheduled mobile blood drive and assigned one of two procedures. The foot-in-the-door approach involved first asking the participants for a small offer of help, to display a Blood Centre card, and having agreed to this request, they were then asked to donate blood the next day. The second group, assigned the door-in-the-face approach, were first asked to commit to regular donation for three years, and having refused that request, were then asked to make a one off donation the following day. The control group were simply asked to donate blood the next day. Names were collected and compared with actual attendance at the mobile drive. Verbal intentions to donate blood were strongest for the door-in-the-face group (who were first asked for a large request followed by a lesser

one), and were weaker but identical for the other two conditions (the foot-in-the-door group who had been asked a small favour first followed by a request to donate blood, and the control group who were simply asked to donate blood the next day). Actual donation behaviour was also strongest for the door-in-the-face approach (12 of 63 respondents donated). Interestingly, more of the control group actually donated than the foot-in-the-door respondents (7 of 63 compared with 2 of 63). Overall, far fewer respondents actually donated for all three approaches when compared with intentions to donate.

In a similar study, Foss and Dempsey (1979) used the foot-in-the-door technique to encourage first-time blood donation. In three separate experiments they first asked research participants to either place posters for a mobile blood visit on their door, or to help recruit donors. Later, they asked the respondents by phone or in-person to donate blood. Unlike the earlier study reported above, this study found little difference in actual behaviour compliance between the experimental and control conditions.

Similarly, Hayes, Dwyer, Greenwalt and Coe (1984) carried out a telephone survey in which they first made a small request that the caller agree to be added to a list of potential donors, should they be needed. Agreement to this request varied from 85% among active donors, 71% among inactive donors, and 40% among non-donors. Respondents were called 7 to 10 days later and asked to actually donate blood. A control group was asked to donate blood without first being asked to have their names added to a list of potential donors. For all groups, agreement to donate blood was greater among those who were exposed to the first request, than those who were simply called and asked to donate.<sup>5</sup> Inactive donors in particular were more likely to be potentially reactivated during this study. It is perhaps not surprising that donation compliance with the request in this study was greater than with the request in the previous study by Foss and Dempsey. That is, it can be surmised that those who agreed to the minor request, to add their names to a list of potential donors, already showed a greater degree of willingness to donate blood than those in the previous study who were only asked to display a blood donation poster.

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<sup>5</sup> Actual behaviour was not reported.

In regards to the effect of social pressure on willingness to donate blood, an obvious downside to increased donations resulting from social pressure is the danger that people who should not donate blood, will feel obliged to do so. For example, two studies found that 25 to 30 percent of donors who were interviewed after testing positive to HIV claimed to have donated because they were pressured to do so, despite knowing at the time of the donation that they were at risk (Piliavin, 1990). Thus, whilst some forms of inducement to encourage blood donation, such as blood collection agencies providing certain health related information for free deserve further investigation, the merits of undertaking further studies which focus on the effect of social pressure to donate blood are questionable. Instead, only studies that focus on external motivators that could be used in practice are potentially helpful as it is unlikely that blood collection agencies would engage in recruitment strategies that involve any form of deception.

### ***Intrinsic Motives to Act***

It is generally believed that there are multiple motives for complex acts such as blood donation (Piliavin, 1990). Not surprisingly then, a wide variety of intrinsic motives have been reported to contribute to blood donation behaviour. For example, Dichter (1972; cited in Oswalt, 1977) stated that people who donate blood report feeling superior to non-donors, and even consider themselves to be heroes. In general, however, three motives are cited most often for donating blood: altruism, community support, and increased self-esteem (Titmuss, 1970; Condie, Warner and Gillman, 1976; Boe and Ponder, 1981; Drake *et al.*, 1982; Ibrahim and Mobley, 1993).

Altruism is the most often cited reason for donating blood (Paulhus *et al.*, 1977; Piliavin, 1990; Oswalt and Gordon, 1993). Yet, a problem with defining donors' motivation simply as 'altruistic' is that there is no uniformly agreed definition of an act of altruism. For example, Rapport and Maggs (2002) report that very different definitions have been ascribed to the term, from unconditional acts of giving, to reciprocal acts which benefit both giver and receiver. In terms of blood donation, it should be noted that the giver has nothing to gain, and arguably more to endure, which suggests a unique giving situation when compared to other forms of altruistic behaviour. Even if blood donation does result from altruism, it is extremely difficult to measure this factor, thus it is not usually included as an explanatory variable (Andaleeb and Basu, 1995). For example, a study by Magoo and Khanna (1991; cited in Barkworth *et*

*al.*, 2002) failed to reveal a statistically significant link between blood donation and 'altruism', which was partly explained by difficulties in achieving valid measures of altruism.

A further problem with attempting to isolate the effect of the variable 'altruism' on behaviour is that it is unclear whether altruism is the reason cited for the motivation to donate, or whether donors rationalise their reason to donate by citing altruism. Moreover, at least one study has found that altruism and social responsibility were among the least significant variables distinguishing donors from non-donors (Condie *et al.*, 1976). Interestingly, this study was conducted at the time that the USA was changing to a social responsibility donation collection system.

Yet, like altruism, a strong commitment to community support is also believed to correspond closely with increased willingness to donate (Piliavin, 1990). Thus, it has been suggested that blood collection agencies should consider increasing the perception that local normative support for blood donation exists. For example, a study by Foss (1983; cited in Sarason *et al.*, 1991) found individuals who perceived there was strong community support for donation were more likely to have donated in the last year than those who did not share this perception. The Blood Services of New Mexico, USA, appealed to the social responsibility motive during their successful conversion from a paid to a volunteer donation system (Surgenor and Cerveney, 1978; von Schubert, 1994). Following a change in blood collection policy from paid to altruistic collection of blood, the Blood Services of New Mexico became the pilot centre for this transformation. Within a period of less than two years (1972 to 1974) a change occurred from a practice of obtaining blood mostly from paid donors to one in which all of its blood now comes from donors who give for purely altruistic reasons. Interestingly, total units of blood collected during 1971 to 1975 increased following the conversion. It is not clear whether this increase was due to the change in procedure, or due to other factors, such as demographic changes in the region. However, as Surgenor and Cerveney note, there was an adequate supply of blood before, during and after the conversion from paid to altruistic donation.

Piliavin (1990) concluded that people are most willing to respond to requests to donate blood if, in addition to the perceived existence of community support for blood

donation, they also perceive a need for blood. In fact, Piliavin and Callero (1991) believe that the perception of a community's need for blood is a primary motivating factor that contributes to blood donation. This view was supported by Drake (1978; cited in Burnett and Leigh, 1986), who also stated that awareness of the general need for blood is the most highly ranked factor in blood donation decisions. Thus, how much blood is donated is likely to relate to how well the message of need gets across. This belief was reinforced by an incidence in South London, when the accidental stamping of "Emergency" on reminder-cards led to an over-supply of donors (Knight, 1983). Awareness of the need for blood was also a chief motivating factor for donating blood cited by donors in a study by Leibrecht, Hogan, Luz and Tobias, (1976). Interestingly, however, a community need for blood was only considered an important motivator to donate by current donors in this study, not by non-donors. Thus it is not clear whether donors donate in response to a perceived need for blood, or instead, cite perceived need for blood to rationalise their behaviour subsequent to performing the act of donation.

A person's level of self-esteem is also thought to relate to their willingness to donate blood, with various studies reporting increased self-esteem as a motivator for donating blood (Burnett, 1981; Burnett and Leigh, 1986; Piliavin, 1990). This view suggests that the act of blood donation is undertaken for reasons which are more selfish than altruistic. Yet, as with difficulties defining altruism, defining and measuring the effect of self-esteem, or other similar self-images, on donation behaviour is also difficult. As such, findings on the predictive ability of such variables should be viewed with caution.

The main conclusion that can be drawn from available studies on intrinsic motivational differences between donors and non-donors is that donors and nondonors are different. However, there is little evidence to suggest that the motives that distinguish donors from non-donors are necessarily predictive of continued donation behaviour. Furthermore, it is difficult to conclude whether reported differences between donors and non-donors are due to real differences in the motivation of different groups, or due to differential targeting of the groups, or variations in recruitment efforts in favour of certain groups. The exact motivational differences are difficult to define and isolate, and therefore, arguably, further investigations into donors' intrinsic motives to donate blood are unlikely to advance researchers' current understanding of blood donation behaviour.

### ***Constraints Against Donation***

In addition to studies that have investigated reasons that donors donate blood, further studies have reported reasons people cited for not giving blood, or discontinuing as a blood donor. Commonly cited reasons include: perceived risk from the donation process, fear of needles, fear of medical disqualification, pain, aversion to the sight of blood, weakness, dizziness, adverse reactions, apathy, time constraints, lack of convenient opportunity, lack of knowledge of the collection process, insufficient awareness of need of blood and, more recently, fear of contracting AIDS (Oswalt, 1977; Boe and Ponder, 1981; Piliavin, 1990; Ibrahim and Mobley, 1993; Oswalt and Gordon, 1993; Royse, 1999; Barkworth *et al.*, 2002).

Level of fear of the donation process is considered the most influential demotivational aspect among non-donors (Piliavin and Callero, 1991; Barkworth *et al.*, 2002). For example, a Polish study reported in Piliavin's (1990) review of the blood donation literature found that nearly 50% of donors reported experiencing fear about their initial blood donation. As donors gain experience many, but not all, are believed to master their anxieties. This factor is considered likely to affect the accuracy of donation predictions, with greater accuracy expected from experienced donors.

Perceived risk of the blood donation process, for example, the risk of contracting AIDS, has led to a significant decrease in the number of people willing to donate blood, regardless of their level of donor experience (Allen and Butler, 1993; Ibrahim and Mobley, 1993). Interestingly, a study by Nonis *et al.* (1996) found no significant difference between donors and non-donors in the perception of risks associated with blood donation. This suggests that donation experience alone is insufficient to dispel any perceived risks donors may associate with the donation process. For others, concern about their own eligibility to donate blood is also a reason cited for not donating (Piliavin and Callero, 1991). This suggests that promotional programmes are necessary to educate prospective donors about donor eligibility and to negate any perceived concerns regarding health concerns from the act of donation.

Lack of a convenient opportunity to donate is also cited as a reason to not donate blood (Piliavin, 1990; Ibrahim and Mobley, 1993). To encourage donation it is therefore suggested that blood collection agencies provide regular mobile drives and have centres

conveniently located. Piliavin and Callero (1991) state that donors who only give at mobile sites often *perceive* that this is the only opportunity they have to donate. This would suggest that it is necessary for blood collection agencies to ensure that information about central locations to donate also is widely available.

Drake *et al.* (1982) found that one of the main reasons people gave for not donating was that they had never been asked personally. Similarly, Condie (1979; cited in Piliavin, 1990) found that respondents did not consider mass media appeals to count as “actually having been asked”. Moreover, Lipsitz, Kallmeyer, Ferguson and Abas (1989) found asking for commitment to donate, rather than simply reminding people to donate, appreciably increased blood drive participation rates. However, as suggested earlier, increased pressure to donate may in fact have a detrimental effect on continued donation beyond the initial commitment.

Piliavin’s (1990) review of the blood donation literature found that donors who have had a negative reaction associated with blood donation are less likely to donate again. Negative reactions may include dizziness, fainting and nausea. For example, one study Piliavin reviewed, which investigated two samples of high school donors and one sample of college donors, found that between 9.7% and 11.6% experienced either mild or moderate reactions. In all samples respondents reported more negative moods after donation, were less likely to think they were the type of person who should give blood, and their intentions to return were significantly decreased. Their actual rates of return donation were also significantly decreased.

Being deferred for donation for various reasons also increases the likelihood that a donor will not return (Piliavin, 1990). In five separate studies reviewed by Piliavin, donors who had been deferred temporarily were less likely to return, particularly if they were first time or reasonably new donors. Thus, as donor numbers fall, permanent loss from temporary deferrals becomes more critical.

Whilst new donors are most concerned about the donation process itself and the pain and discomfort they associate with the process, Paulhus *et al.* (1977) report that more experienced donors complain most about the actual time needed to complete the donation. That is, having mastered their anxiety about the donation process, their

thoughts turn instead to issues beyond pain and discomfort. It takes approximately three quarters of an hour to make a donation of blood, allowing for the screening procedure, blood collection, and recovery time. However, Piliavin (1990) suggests that the actual time that the procedure takes is unrelated to donor return, and that it is the perceived, rather than the actual waiting time, that appears to be related to whether donors return. It would seem that regardless of whether donors are discouraged by the actual donation time or the perceived donation time, this is an issue that blood collection agencies can attempt to address in their promotional material to encourage repeat donations.

Of course, it is difficult to know conclusively whether the reasons cited above for not donating blood were always truthful answers, or simply reasons offered as an excuse or rationalisation for not donating. For some people, verbally expressing their motives for behaviour is not easy, as they may not really know why they act as they do (see Kirk-Smith, 1998). Therefore, whilst this section has provided some insight into non-donor behaviour, further studies designed simply to ask potential donors why they do not donate blood are unlikely to solve the problem of blood donor shortages.

### **2.2.3 Donor Experience**

A consistent finding of blood donation research is that most of the blood donated comes from repeat donors (Oswalt, 1977; Piliavin, 1990). Gillespie and Hillyer (2002) report that repeat donors represent a range of 78% to 91% of all donors. For this reason, blood collection agencies are heavily dependent upon a core of committed, regular donors. An important research question, therefore, is what leads first time donors to become committed, regular blood donors? This section considers the effect that donor experience has on the decision process leading to a first time donor becoming a committed, repeat donor.

It is acknowledged that first-time, irregular, and regular donors differ in many ways. Even ex-donors are thought to differ between those who are confirmed ex-donors, and those who have ceased to donate but would be willing to resume again given the right circumstances or encouragement (Drake *et al.*, 1982). Reasons suggested for these differences in donor status include: changes in the degree to which specific factors, such

as fear of the donation process, alter according to donor experience; the number of donations required before a donor commits to the donation habit; and changes from external influences to internal influences to donate that may influence donor status and donation frequency.

Fear of the donation process is considered a major factor associated with donors' willingness to donate blood (Piliavin, 1990). Miller and Weikel (1974; cited in Oswalt, 1977) found that adverse physiological reactions and pain associated with the donation process are two major causes of high donor dropout rates, especially among newer donors. Some studies have investigated whether the predictive ability of the 'fear' variable varies in strength depending on the donor's level of donation experience. For example, feelings of nervousness and fear are reported as greater before the first donation and considered less important with more experienced donors (Kushnir, 1980; Breckler, 1994; Barkworth *et al.*, 2002). Tyano, Munitz and Wijssenbeek (1975; cited in Piliavin and Callero, 1991) also investigated the degree to which donors' fear of the donation process altered with experience. This study, undertaken in Israel, measured anxiety using skin resistance measures to indicate physiological arousal throughout the donation process and found, perhaps not surprisingly, that anxiety was greater before the needle puncture, than after. Yet, interestingly, Tyano *et al.* also report that anxiety is higher after the second donation than the first, and falls to a minimum by the tenth donation. These findings are supported by other studies using ratings, actual heart rate measures and mood scale measures (see Piliavin and Callero, 1991). Anxiety by all measures decreased with donation experience.

Also, not surprisingly, non-donors have been found to be significantly more likely than existing donors to report that donating blood would be painful, would result in them feeling faint or dizzy, would lead to nausea, and would create feelings of anxiety (Pomazal and Jaccard, 1976; Giles and Cairns, 1995). Similarly, 'regular' donors have been found to report less physical discomfort and fear than 'irregular' donors (Edwards and Zeichner, 1985; cited in Piliavin and Callero, 1991). These findings imply that campaigns promoting blood donation behaviour would be wise to reduce possible physiological related fears, as well as emphasising the positive aspects of giving.

Researchers have also considered other factors associated with why some donors commit to the blood donation process on a regular basis and others do not. Piliavin and Callero (1991) suggest that self-categorisation as a 'regular donor' has a strong impact on behaviour leading to regular, frequent donation. Thus, the decision to commit to becoming a regular donor occurs due to an internal process in which a donation habit develops. Piliavin, Callero, and Evans (1982) posit a model of commitment that consists of three phases in the process of becoming a regular blood donor: receptiveness, commitment, and habit maintenance. They describe receptiveness as the state where a first-time donor must make a conscious decision as to whether he or she is willing to donate based on a physical and psychological self-assessment. The second phase, commitment, occurs when the individual develops a positive commitment to donate, and has eliminated reasons for not donating. The third phase, habit maintenance, occurs as a habit forms to regularly donate. During this phase negative factors may intervene to interrupt the habit maintenance process. For example, changes in life routines, increased waiting times, a bad experience, or simply losing interest in the process, may lead to discontinuation as a regular blood donor. Thus, habit is thought to have a positive effect on the number of future donations; the longer donors remain actively donating, the more likely it is that they will become committed donors. What is not well understood is what factors lead to the maintenance of long-term donation behaviour.

Kessler (1975; cited in Barkworth *et al.*, 2002) studied the factors that affect the decision to donate at different stages in a donor's career, and in particular, the factors that lead to the development of a habit of donation. This study concluded there are two closely related but different questions: first, why does a person decide to donate for the first time and, second, why does a person decide to repeat donations? An answer to the first question need not have anything to do with the answer to the second. Various reasons for making the decision to donate for the first time were presented in the previous section. In terms of on-going donation behaviour, Kessler concluded that the decision to donate for a third or fourth time was a major hurdle in a donor's career. Once past this stage, the donor was said to have developed a blood donation habit.

Piliavin *et al.*, (1982) and Piliavin and Callero (1991) support the suggestion that a donation habit develops around the third or fourth donation and at this point donors

make their commitment to donate regularly. Thus, the third or fourth donation is the point when the decision process changes after a few donation experiences from 'should I give', to 'when should I give'? Burnett and Leigh (1986) also argue that a donor's level of donation experience is a differentiating variable amongst donors and that a donor's rationalisation for donating strengthens with repeat donations. This view is supported by Paulhus *et al.* (1977), who found that experienced donors reported a stronger motive to donate, a greater likelihood of donating in the future, and weaker aversive beliefs.

However, not all researchers agree with the view that donation experience affects on-going donation behaviour. For example, a Swedish study by Sojka and Sojka (2003), did not observe any increase in positive post-donation feelings with increasing numbers of blood donations. When blood donors with fewer than five blood donations were compared to those with more than five donations, no major difference was found with respect to frequency of occurrence of positive and negative effects among donors with a different number of donations. This study mirrored the findings of an earlier study by Zillmer, Glidden, Honaker and Meyer (1989; cited in Sojka and Sojka, 2003). Therefore, whilst experience undoubtedly plays a role in the decision to donate, it is not totally clear what role it plays in long-term donation behaviour.

Researchers have also considered whether commitment to blood donation alters from extrinsic to intrinsic motives to donate as the level of donation experience changes (Lightman, 1981). It is generally concluded that at least three donations are required before blood donation behaviour changes from external reasons for giving, such as social pressure, to internally driven reasons such as community support (Condie *et al.*, 1976; Piliavin *et al.*, 1982; Allen, Machleit and Kleine, 1992). Extrinsic motivations, such as social pressure or being accompanied by a friend, are reported as being the most important initial motivators. In fact, Piliavin and Callero (1991) argue that mild forms of external inducement must be relied on to encourage the first donation. For example, the use of personal appeals is considered the most effective form of initial recruitment. However, extrinsic influences are believed to decrease as donors become more experienced, and internal motivators increase in importance (Piliavin, 1990); for example, the influence of friends and families to make the donation decreases, and reasons such as a general desire to help others increases. Thus, depending on a donor's

level of donation experience, his or her rationalisation for donating blood may vary over time.

It has been suggested that people who are externally motivated to donate initially are more likely to drop out before four donations, but once they have donated four times, are likely to be as equally committed as people who first donated due to internal factors (Piliavin and Callero, 1991). However, it is also acknowledged that a donor's decision to commit to regular donation, or the change from extrinsic motivations to intrinsic motivations, is difficult to measure as the time frame between donations may differ extensively between donors.

Therefore, whilst it is somewhat helpful for blood collection agencies to be aware that donors' level of commitment to the donation process may undergo transitions relating to the number of times they have donated, this information alone is not sufficient to predict future donation behaviour. Piliavin (1990) states that regular donation following the first donation is an important factor for predicting continued donation. Indeed, some donors begin a donation habit with regular donations continuing from the first donation. However, other donors donate again, but only sporadically, and are less likely to commit to blood donation. Therefore, it can be concluded that donation frequency *per se* is not necessarily an accurate predictor of ongoing donation behaviour.

## **2.3 SUMMARY**

To date, many aspects of donor motivation have been investigated, yet 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 twenty years or so. This view is supported by Piliavin's 1990 review of the blood donation literature. She concluded that there is no reliable way to predict who is most likely to donate blood. More recent studies have still not found a reliable way to predict blood donation behaviour.

Whilst some variables have been identified in numerous studies as explanatory predictors of blood donation behaviour, overall the findings of these studies are not conclusive. It is difficult to compare the results as the various studies have been conducted using different methods, different populations, different sampling techniques, and different variable measurements. Furthermore, the findings have not always been in the same direction or of the same strength. For example, despite numerous studies that have compared donors' characteristics with non-donors' characteristics, the findings have been inconsistent and have lacked theoretical underpinnings (Burnett and Leigh, 1986). Moreover, the existing body of literature on blood donation is relatively small, much of the research is dated, and many findings are based on data from one country, the USA (Barkworth *et al.*, 2002). Another criticism of previous blood donation research noted by Barkworth *et al.* is that relatively few studies have used actual donation as an outcome measure, but instead have measured attitude towards donation. Some doubt exists as to the strength of correlation between attitudes and behaviour and it cannot be assumed that behavioural intentions are the same as actual donation behaviour. This issue will be examined more closely in the next chapter.

Nevertheless, since providing a dependable supply of blood is a primary mission for most blood collection agencies, it is logical to persist in attempting to obtain information that assists with targeting donors who are most likely to donate blood. Therefore, continued research attempts to identify which variables are the best predictors of blood donation behaviour are justified and necessary. If a reliable method of detecting differences between those who are more likely and less likely to donate were found, this could help blood collection agencies formulate specific strategies aimed at attracting and retaining those who are the most likely prospects.

Whilst researchers agree that further information is needed for the effective development of recruitment and retention strategies, there is less agreement on how to achieve this objective. Perhaps, as Oswalt (1977) suggested, the problem lies in an inability to identify additional relevant variables, and failure to synthesise existing variables into a meaningful profile for both the donor and the non-donor. Given the fact that numerous studies to date have investigated blood donors' characteristics, attitudes and perceptions, and yet a clear picture of those most likely to donate has not emerged,

it would seem logical to investigate alternative methods of identifying predictor variables.

The next chapter considers approaches to predicting human behaviour. In particular, it will examine two alternative approaches to predicting behaviour with a view to identifying variables that would help predict who is most likely to donate blood.

## **3. APPROACHES TO PREDICTING BEHAVIOUR**

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### **3.1 INTRODUCTION**

Understanding and predicting human behaviour has been of particular interest to marketers for many years. Moreover, the assumption that knowledge of attitudes will help in the task of predicting human behaviour has formed the basis for much consumer and market research. Attitudes are assumed to play an important role in consumer theory and marketing practice as the crucial link between what consumers think and what they do.

Much of the prior research on the relationship between attitudes and behaviour was developed within other disciplines, and in particular, within the field of social psychology. Not surprisingly then, marketing researchers have approached the study of the attitude-behaviour relationship by borrowing heavily from attitude theories developed within a social psychology framework (Peter, 1979; Nord and Peter, 1980; Foxall, 1997). However, some researchers question the ability of attitudes to predict behaviour, and argue that an alternative approach may lead to better predictions of human behaviour.

The purpose of this chapter is to explore two approaches to predicting behaviour. First, this chapter examines the most widely accepted approach to predicting behaviour in which attitude forms the basis of behavioural predictions. Then, an alternative, and less commonly accepted approach to predicting behaviour is presented, in which behavioural aspects of people's lives form the basis of behavioural predictions.

### **3.2 USING ATTITUDE TO PREDICT BEHAVIOUR**

Occupying a central position in the study of both social psychology and marketing is the concept of attitude (Allport, 1935; Ajzen and Fishbein, 1980; Foxall, Goldsmith and Brown, 1998). In fact, Foxall (1980) describes 'attitude' as the most influential behavioural science variable to have found a place in marketing thought and practice.

This description is reinforced by Kraus (1995), who observed that the computerised database PsychLit indexed more than 34,000 studies published since 1974 that address attitudes in some way. Similarly, a review of empirical and conceptual developments on attitudes between 1992 and 1995 by Petty, Wegener and Fabrigar (1997) reports that “a voluminous amount of material was produced concerning attitude structure, attitude change, and the consequences of holding attitudes” (p. 609). This led Petty *et al.* to surmise that due to the sheer volume of published research on attitudes during this time, Allport’s (1935) statement that ‘attitude’ is the single most indispensable construct in social psychology may still be true today. Certainly, recent observation of computerised literature databases suggests many more attitude-related studies in the fields of marketing and social psychology have been published since Kraus and Petty *et al.*’s observations.

In particular, the attitude concept has played a central role in studies that have attempted to understand human thought and behaviour (Ajzen and Fishbein, 1980). Perhaps the most fundamental assumption underlying the attitude concept is the notion that attitudes in some way, guide, influence, direct, shape, or predict actual behaviour (Ajzen and Fishbein, 1974; Gross and Niman, 1975; Kraus, 1995). Thus, it is not surprising that researchers interested in marketing theory ascribe great importance to the role of attitudes in predicting and explaining human behaviour (Foxall *et al.*, 1998).

With few exceptions, the assumption that attitude is useful for predicting behaviour went unchallenged until the 1960s (Ajzen and Fishbein, 1980). In early research, attitudes were most widely used as dependent variables. It was rare for attitudes to be used as independent variables, particularly in predicting the dependent variable of behaviour (Kraus, 1995). In fact, Kraus describes the first few decades of the twentieth century as an era of indifference to the attitude-behaviour relationship. Many researchers simply assumed implicitly that attitudes would be closely related to overt (observable) behaviour. The need to demonstrate that attitudes predicted behaviour was not seen.

However, between the 1960s and the late 1970s, attitude research received much criticism (Tuck, 1976; Eagly and Chaiken, 1993; Kraus, 1995). Years of early research failed to provide strong support for the behavioural consistency or predictive validity of

attitudes. It was found that people neither behaved consistently in different situations, nor acted in accordance with their measured attitudes. Thus, in time the feeling grew that stated attitudes are not always consistent with overt behaviour. In particular, a review by Wicker (1969) of 47 empirical studies of attitudes and behaviours concluded, “it is considerably more likely that attitudes will be unrelated or only slightly related to overt behaviours than that attitudes will be closely related to actions” (p. 65). This review resulted in considerable controversy and caused many researchers to question seriously whether attitude was still useful as a scientific construct to predict behaviour (Ajzen and Fishbein, 1973; Ajzen, 1987; Kraus, 1995). For example, in 1975, Fishbein and Ajzen wrote,

*The centrality of the attitude concept remains unchallenged and, if anything, its importance has increased. Nevertheless, conceptions of attitude have undergone many changes in the past four decades. Most of these changes were necessitated by the failure of attitudes to live up to their promise as the central device for explaining and predicting behaviour. Unfortunately, despite the vast amount of research and the publication of countless books and articles on the topic, there is little agreement about what role, if any it plays in influencing or determining behaviour (p. v).*

Similarly, in 1976, Tuck stated,

*Throughout the history of attitude studies psychologists have tried to show that their measurable variable ‘attitude’ really does relate to behaviour. After all it was in an attempt to understand the roots of behaviour that the attitude concept was first developed. Interest in it was sustained because it was hoped it would be an underlying explicatory variable for variations in behaviour. Unfortunately, the attempts to show a clear relationship between attitudes and behaviour have not been very successful (p. 65).*

Since such concerns were expressed, much research has focussed on developing both the theory and measurement of attitudes in an attempt to improve predictions of human behaviour.

### ***Attitude Theory and Measurement***

One explanation offered for the inconsistency in attitude-behaviour findings is that historically researchers have not universally agreed on the components or elements of the attitude construct, and as a consequence, nor have they agreed to an explicit definition of attitude (Fishbein and Ajzen, 1975; Tuck, 1976; Olson and Zanna, 1993; Foxall, *et al.*, 1998). Therefore, over the years a multitude of definitions of attitude have been offered by researchers, resulting in much confusion and ambiguity surrounding the attitude concept (Eagly and Chaiken, 1993).

With no clear definition of attitude available there was no clear approach as to how attitudes should be measured, leading to a variety of measures of 'attitude' reported in the early literature (Gross and Niman, 1975; Tuck, 1976; McGuire, 1985). For example, in a review of research published between 1968 and 1970, Fishbein and Ajzen (1972; cited in Fishbein and Ajzen, 1975) found more than 500 different procedures that had been used to measure attitude. These procedures included standard attitude scales (e.g. Likert, Guttman, Thurstone, and semantic differential scales); other indices across various verbal items; single statements of feelings, opinions, knowledge, or intentions; observations of one or more overt behaviours; and physiological measures. Fishbein and Ajzen (1975) reasoned that if an understanding of what an attitude is could be agreed, consistency in measurement would result, and researchers would be able to better explain and predict a person's behaviour.

Some consensus in attitude definition has now been reached (Tuck, 1976; Eagly and Chaiken, 1993). A commonly cited definition of the attitude concept describes it as a learned predisposition to respond in a consistently favourable or unfavourable manner with respect to a given object (Fishbein and Ajzen, 1975; Tuck, 1976). Similarly, Eagly and Chaiken (1993) define an attitude as a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour. Moreover, East (1990) posits attitudes are about some concept, which may be a brand, a person, an ideology, a behaviour, or any other entity which we can think of and to which we can attach feeling.

Despite superficial differences, what the above definitions of attitude have in common is they tend to imply three things: that attitudes are learned, that they are in some sense

a predisposition to behave, and that they have something to do with an evaluative dimension; that is, whether the person is 'for' or 'against' the attitude object. Thus, an attitude can be regarded as a type of bias that predisposes individuals toward evaluative responses that are positive or negative, resulting in them acting or behaving in some predictable way (Tuck, 1976; Foxall, 1980).

However, whilst some consensus on attitude definition has been reached, measurement issues relating to the attitude-behaviour relationship have remained problematic. Attitude is usually measured using a standard measurement scale such as the Likert scale, the Thurstone scale, or Osgood's semantic differential scale<sup>4</sup> (Foxall, 1980). Yet it is accepted that psychological responses are especially prone to measurement error (Bagozzi, 1981). East (1990) explains that problems with psychological measurement include obtaining agreement among researchers on the following issues: the exact concept being measured, which verbal description to use on scales, what numerical subdivisions to use, whether scales are uni-polar (e.g. 1-7) or bi-polar (e.g. -3 - +3), and whether summations of products are appropriate. Fishbein and Ajzen (1975) argue that all too often no standard procedure is followed, and different measures are combined in different arbitrary ways. (These include such combinations as weighted or unweighted sums or averages, difference scores, similarity indices, squared differences, differences between differences, ratios, products, etc.) Liska (1984) concurred that as a result of these problems attitude research has proceeded in a disorderly fashion.

In addition to definition and measurement issues, researchers have considered alternative explanations for the failure of attitudes to predict behaviour. One question that has drawn considerable interest is whether behaviour is dependent on factors other than attitude. Since the discovery that attitude alone often is insufficient to accurately predict behaviour, many researchers now believe that the attitude-behaviour relationship is influenced significantly by what are commonly referred to as 'other' variables (Weissberg, 1965; Wicker, 1969; Liska, 1984; Allen, Machleit and Kleine, 1992). For example, Ouellette and Wood's (1998) meta-analysis of studies that examined habit as a predictor of behaviour or behavioural intention found that it was as effective a predictor as attitude and a particularly strong predictor of routine behaviours.

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<sup>4</sup> Basically, the Likert scale is a measure of level of agreement; the Thurstone scale is a measure of level of favourability and the semantic differential scale is a measure of the meaning which respondents attach to words or concepts.

Despite on-going debate about the nature and definition of attitudes, measurement issues, and the role of other variables in the attitude-behaviour relationship, most researchers have been unwilling to give up the assumption that there is a direct link between attitude and behaviour (Ajzen and Fishbein, 1980). In fact, since doubts were first expressed about researchers' ability to predict human behaviour, many studies claim to have made considerable progress. Thus, the concept of 'attitude' has gradually regained its central position in studies related to the understanding and prediction of human behaviour (Ajzen, 1988).

Two researchers, Ajzen and Fishbein, have been prominent in refining attitude definition and measurement, and addressing the role of 'other' variables in behavioural predictions (Liska, 1984; Eagly and Chaiken, 1993). The next section presents the conceptual framework underlying Ajzen and Fishbein's approach to predicting behaviour.

### **3.2.1 Ajzen and Fishbein's Approach to Predicting Behaviour**

In recognition of early difficulties with the attitude-behaviour relationship, Ajzen and Fishbein advanced a theory in which the attitude concept is examined in separate parts (Fishbein, 1963, 1967; Ajzen and Fishbein, 1973). Specifically, the foundation for Ajzen and Fishbein's conceptual framework is provided by their distinction between four components: beliefs, attitudes, intentions and behaviours.

This section begins by examining each component of Ajzen and Fishbein's conceptual framework. Next, two models for predicting behaviour that were developed on the basis of this conceptual framework are outlined; and finally, the application and predictive ability of Ajzen and Fishbein's approach to predicting behaviour is considered.

#### ***Beliefs***

The thoughts that are associated with attitudes are typically termed beliefs. A person's attitudes are believed to form in response to the acquisition of certain beliefs. Beliefs,

therefore, are the fundamental building blocks upon which Ajzen and Fishbein's conceptual framework is based.

As explained previously, an attitude is commonly defined as a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour. Eagly and Chaiken (1993) explain that in attitude theory, entities that are evaluated are known as *attitude objects* or simply *objects*. According to Fishbein and Ajzen (1975), various functions, activities or objects of thought can be described as an attitude object. For example, blood donation can function as an attitude object. Whereas attitude refers to a person's favourable or unfavourable evaluation of an object, beliefs represent the information he or she has about the object.

Fishbein and Ajzen (1975) posit that people may acquire beliefs about an object on the basis of direct observation, or information received from outside sources, or by way of various inference processes. Once formed, a belief links an object to some attribute. East (1990) explains that most people hold both positive and negative beliefs about an object, and attitude is viewed as corresponding to the total affect associated with their beliefs. For example, the belief that 'donating blood saves lives' links the object 'donating blood' with the positive attribute 'saves lives'. On the other hand, a person may also believe that the object, 'donating blood', is linked with the negative attribute 'is a painful experience'.

The most popular framework for measuring the relationship between beliefs and attitudes is provided by Fishbein's (1963) *expectancy-value model* (known also as the Fishbein behavioural intentions model). To obtain a measure of attitude using the expectancy-value model, a person's evaluation of each attribute associated with the object is multiplied by his or her subjective probability that the object has that attribute, and then the products for the total set of beliefs are summed (Fishbein and Ajzen, 1975). This sum serves as an estimate of attitude toward the object under consideration. The expectancy-value model can be represented as follows:

$$A = \sum_{i=1}^n b_i e_i$$

A is the attitude toward the object; b is the beliefs about the object's attributes; and e is the evaluations of the object's attributes.

Therefore, according to Fishbein's expectancy-value model, the attitude concept can be viewed as a set of beliefs. Each belief can be thought of as a separate attribute and a person's overall attitude toward the object is a function of his or her evaluations of those attributes. Different people may have similar beliefs about various objects but may give them quite different evaluative weights. Thus, according to the equation above, similar beliefs may result in different attitudes depending on the different evaluative weights given. Hence, individuals will vary in their attitudes about, say, blood donation, depending on the strength and mix of beliefs they have about this concept.

Furthermore, although a person may hold a large number of beliefs about any given object, it is thought that only a relatively small number serve as determinants of attitude at any given point in time (Fishbein and Ajzen, 1975). That is, only the salient beliefs or those that come easily to mind shape the formation of attitudes. Therefore, within Ajzen and Fishbein's conceptual framework, beliefs that are dredged up from the recesses of the mind are considered unlikely to have much effect on behaviour (East, 1990).

Fishbein and Ajzen (1975) further state that in the course of people's lives, their experiences lead to the formation of many different beliefs about various objects, actions, and events. Some beliefs may persist over time, others may be forgotten, and new beliefs may be formed. Some beliefs can be relatively stable, whereas others can vary considerably. Thus, it follows, as beliefs are not static, neither are attitudes; some attitudes may be relatively stable over time, and others may frequently alter.

### ***Attitudes***

Fishbein and Ajzen (1975) viewed the noted attitude-behaviour inconsistency as primarily a measurement problem. In response to criticisms of the strength of relationship between attitude and behaviour, they argued that much of the earlier work in attitude measurement failed to predict behaviour because researchers measured the attitude-behaviour relationship using incorrect measurement techniques. This problem

was thought to arise in part because attitude was badly conceptualised by the multicomponent concept of attitude (East, 1990).

Discussion of attitude sometimes refers to the three components of attitudes: the cognitive component which refers to thoughts or perceptions people have about the attitude object; the affective (evaluative) component which refers to feelings or emotions that people have in relation to the attitude object; and the behavioural component which refers to people's actions with respect to the attitude object (Eagly and Chaiken, 1993). This conceptualisation of attitude assumes a close correspondence between each of the three components in terms of the attitude object. Using an example from East (1990), it would be expected that a close correspondence occurs with the liking of cheese (the evaluative component), how the properties of cheese are valued (the cognitive component) and the actions such as purchasing and eating cheese (the behavioural component). However, East argues it is incorrect to assume that all three components must closely correspond in order for someone to purchase cheese. That is, someone who doesn't like cheese may still buy it for a variety of reasons, which go beyond personal preferences.

Ajzen and Fishbein (1980) rejected the multicomponent view of attitude and instead treat attitude as a unidimensional evaluative concept only, not as an aggregation of evaluations, cognitions and behavioural dispositions. They argue that the major characteristic that distinguishes attitude from other concepts is its evaluative nature. That is, an attitude can be measured by a procedure that locates an evaluative dimension, namely a feeling of favourableness or unfavourableness toward the object in question, along a measurement scale.

Moreover, and central to their conceptual framework, Fishbein and Ajzen (1975) introduced the idea of corresponding measures of attitude and behaviour. They argue that the *attitude to an object* is not necessarily related to the *attitude to behaviour towards that object*. They suggest that researchers' failure to recognise this distinction has led to inaccuracies in behavioural predictions. For example, someone may have a very favourable attitude towards the concept of blood donation (the object), but not wish to become a blood donor personally (the behaviour towards the object). Hence, correlations between attitude to the object and action toward that object may not be

high. Therefore, Ajzen (1988) suggests if it is the action toward the behaviour a researcher wishes to predict, it is the attitude towards performing this action that needs to be measured.

The notion of correspondence is considered a powerful methodological advance in attitude research (East, 1990). That is, the more closely the attitude-behaviour measures correspond, the higher their correlation. Historically, it is argued, attitude research in marketing has tended to be a tale of measuring the wrong variable (Eagly and Chaiken, 1993). As a consequence, all too often the attitude measure simply failed to correspond with the behaviour measure (Fishbein and Ajzen, 1975). Ajzen and Fishbein (1980) considered this was the case with many of the studies referred to in Wicker's (1969) review, which casts doubt on the ability of attitude to predict behaviour.

### ***Intentions***

Fishbein and Ajzen (1975) define a behavioural intention as the subjective probability that a person will perform some behaviour. Within their conceptual framework it is assumed that a behavioural intention is the immediate determinant of the corresponding overt behaviour (Ajzen and Fishbein, 1970). Hence, the closest prediction of actual behaviour is estimated by a measure of behavioural intention.

For many years researchers assumed that the relationship between attitude and behaviour was direct. That is, the more favourable the attitude, the more likely someone is to behave in accordance with that attitude, with no other variables intervening the relationship. However, Ajzen and Fishbein (1980) disputed this assumption, and argued that attempts to predict behaviour simply by measuring attitudes will not succeed. Hence, they concurred with Wicker (1969) and others who concluded that often attitudinal measures and overt behaviour measures toward the same object were not closely related. In response to Wicker's conclusion that attitudes are not good predictors of behaviour, Fishbein and Ajzen (1975) stated,

*Despite repeated failures to demonstrate a strong relation between attitude and behaviour, the basic assumption that human behaviour is determined by attitudes continued to persist (p. 340).*

The point that Ajzen and Fishbein make is that the performance or non-performance of a specific behaviour usually cannot be predicted from knowledge of the person's attitude alone. Rather, they assert that attitude is not directly related to behaviour, but instead is related to behavioural intentions.

As previously explained, Ajzen and Fishbein's conceptual framework suggests that a person's attitudes are a function of certain beliefs. That is, attitude toward performing a given behaviour is related to a person's beliefs that performing the behaviour will lead to certain consequences and a person's evaluation of those consequences. In turn, attitude is viewed as *one* major determinant of the person's intention to perform the behaviour in question.

However, other beliefs are also considered to be relevant for the formation of behavioural intentions (Ajzen and Fishbein, 1970). These are normative beliefs that occur due to other people's influence on whether an individual should or should not perform the behaviour in question.

Fishbein and Ajzen (1975) use the term 'subjective norm' to describe the influence of normative beliefs; 'subjective' because it is what people think, and 'norm' because it is what people believe others think they should do. For example, the influence of friends, family or work colleagues may impact upon a person's intention to donate blood. Just as attitude can be viewed as the product of a set of beliefs about positive and negative attributes and the corresponding evaluations of those attributes, subjective norm is viewed as the aggregated product of an individual's set of beliefs about significant others' thoughts about an action, and the corresponding motivation to comply with others' thoughts.

Therefore, it is postulated that in addition to a person's attitudes toward the behaviour, subjective norms are a *second* major determinant of his or her intention to perform the behaviour. This explains why two people may have the same attitude toward, say, religion, but may hold different behavioural intentions concerning religious behaviours, depending on the degree to which other people influence their intentions.

Ajzen and Fishbein (1980) use the following equation to express the formation of behavioural intentions.

$$B \sim I = (A_B) w_1 + (SN) w_2$$

Where B is the behaviour; I is the intention to perform the behaviour B;  $A_B$  is the attitude toward performing behaviour B; SN is the subjective norm; and  $w_1$  and  $w_2$  are empirically determined weights.

Within Ajzen and Fishbein's conceptual framework, attitude and subjective norm are distinguished in two ways. First, each concept is viewed as being independent of the other. That is, each concept influences behavioural intentions independently of the other, and as such, each can be measured separately (Ajzen and Fishbein, 1980). The relative weighting of each concept may vary depending on the object in question. Whilst the extent of the separation between  $A_B$  and SN has been questioned (see Ryan, 1982), Ajzen and Fishbein maintain that there is utility in separating the attitudinal and normative variables.

The second distinction Ajzen and Fishbein make about attitude and subjective norm is that the influence of each on behavioural intentions is within an individual's volitional or voluntary control. That is, it is assumed that people are rational beings and decisions to act, or not act, are arrived at by independent thought processes (Ajzen and Fishbein, 1980). More recently, Ajzen (1985) acknowledged that the formation of behavioural intentions may also be influenced by aspects that are not under a person's volitional control, such as the requirement of certain abilities, or necessary resources. For this reason, the concept of perceived behavioural control was later included in Ajzen and Fishbein's conceptual framework, as an additional variable to account for situations where behaviour is not considered to be under a person's voluntary control. (Further discussion of the perceived behavioural control variable is provided in the theory of planned behaviour section which appears later in this chapter.)

### ***Behaviours***

As outlined in the previous section, Ajzen and Fishbein view behavioural intentions as the immediate antecedents of corresponding overt behaviours. Hence, the best

prediction of behaviour is a person's intention to perform the behaviour. The apparent simplicity of this approach is somewhat deceptive, however.

Fishbein and Ajzen (1975) assert there are two factors that can disrupt the intention-behaviour relationship. The first is the intervening time between the stated intentions and the actual time of the act. Since it is often impossible or impractical to measure a person's intention immediately prior to performance of the behaviour, the measure of intention obtained at one time may not be representative of the person's intention at the time of the behavioural observation (East, 1990). This is due to the fact that behavioural intentions are affected by many situational factors, which may intervene and disrupt the attitude-behaviour relationship (Warshaw, 1980). In turn this leads to a situation where behavioural intentions do not correspond well with actual behaviour. For example, Fishbein and Ajzen (1975) explain that if a person states an intention to buy a car in three months time, any change in his or her financial position, the price of the car, or the availability or price of petrol may influence that stated intention. Put simply, in the intervening time between stating their intentions and the time of the action, people may change their intentions in response to new information or a change in personal circumstances. Interestingly, Sutton (1998) suggests, all things being equal, longer time intervals allow more opportunities for a behaviour to be performed, and would thus tend to increase the intention-behaviour correlation, rather than reduce it. However, this view is not widely supported by empirical evidence.

Thus, it is generally accepted that the more closely the time to the actual behaviour that a behavioural intention is measured, the more accurately it will predict behaviour (Tuck, 1976). Put another way, the longer the time interval, the more likely it is that events will intervene between stated measurements of the intention and observations of behaviour. For example, Ferguson (1996) found that the predictive power of behavioural intentions reduced as the time interval between measurement and the recording of actual blood donor behaviour increased. Interestingly, a meta-analysis of Fishbein and Ajzen intention-behaviour studies by Randall and Wolff (1994) found no evidence that the length of the measurement interval was related to the correlation between intention and behaviour. However, Sheeran and Orbell (1999) have argued that the data used by Randall and Wolff were too sparse to draw this conclusion.

A second factor that Fishbein and Ajzen (1975) suggest causes problems in attitude-intention-behaviour measurement is described as the degree of correspondence (later renamed compatibility by Ajzen, 1988) in levels of specificity. That is, an intention can only provide an accurate measure of a predicted behaviour if there is compatibility in what exactly is being measured. Therefore, Fishbein and Ajzen state it is important that the measures of attitude and intention that are obtained are at the same level of specificity as the behaviour they are trying to predict, in order to match cause and effect. For example, a general intention 'to donate blood' is not the same as a more specific intention 'to donate blood at the university campus next week'. Thus, the more precise the behavioural intention which is obtained, the more likely it is to be accurately related to the subsequent behaviour (Tuck, 1976).

Fishbein and Ajzen (1975) refer to an early, and frequently cited empirical study by LaPiere (1934) to illustrate this aspect of their theory. LaPiere undertook an investigation into racial prejudice in which he travelled across the United States with a young Chinese couple. They visited 251 hotels and restaurants, and were refused service only once. Studies at the time indicated that there was much anti-Chinese sentiment in the USA. Six months after the trip, LaPiere wrote to each of the establishments asking if they would offer service to Chinese guests. Of the 128 who responded, 118 (90%) claimed that they would not serve them, in spite of the fact that all had previously done so. This early study was frequently cited as evidence that little correlation exists between attitudes and behaviour. However, in Fishbein and Ajzen's view, the measure used, which was whether the hotel and restaurant owners "would accept members of the Chinese race as a guest in their establishments" may have received a different response if they had worded the question "would you accept a young, well-dressed, well-spoken, pleasant, self-confident, well-to-do Chinese couple accompanied by a mature, well-dressed, well-spoken....educated European gentleman as guests in your establishment?" (p. 375). That is, in Fishbein and Ajzen's view there was no compatibility between the attitude toward the behaviour measure and the behavioural intention measure used in this study.

Ajzen and Fishbein (1977) suggest using five criteria to check on the compatibility of attitude and action measures and to thereby ensure the same form of wording is used for measures of each. This concept of correspondence in specificity is referred to as *TACT*

(East, 1990). The first criterion is the ‘*target*’, which is the focus or object of the action, for example, blood donation. Second, there is the ‘*action*’, for example, actually donating blood. Third, there is the ‘*context*’, for example, donating blood at the university campus. Fourth, there is the ‘*time*’, for example, next week. Finally, their fifth criterion is a personal aspect which uses terms like ‘for me’ or ‘I’ in their behavioural measures.

Thus, when applying Ajzen and Fishbein’s conceptual approach, there are two important methodological aspects to note in order to improve behavioural predictions. First, the correlation between behaviour and predictor variables will decline as the time interval between measures increases. Second, according to the compatibility principle, all behavioural measures should be equivalently specified in terms of action, target, context, time (TACT) and the personal nature of the action.

### ***The Theory of Reasoned Action***

In response to previous difficulties with definition and measurement issues regarding the attitude-behaviour relationship, and uncertainty in dealing with the effect on behaviour of variables other than attitude, Ajzen and Fishbein (1980) developed the theory of reasoned action.

The theory of reasoned action specifies a sequence of linked cognitive constructs: beliefs, attitudes, intentions and behaviours (see Figure 1). Although interrelated, Fishbein and Ajzen (1975) argue that each is a conceptually distinct concept, which must be independently assessed to predict future behaviour. This theory is an extension of Fishbein’s 1963 *expectancy-value theory of attitude*, which remains part of reasoned action theory (Ryan and Bonfield, 1975; East, 1990). Thus, the theory of reasoned action is based on Ajzen and Fishbein’s conceptual framework as detailed in the previous sections.

**Figure 1 Model of The Theory of Reasoned Action**



As discussed previously, Ajzen and Fishbein view a behavioural intention as the immediate determinant of the corresponding overt behaviour. Moreover, a behavioural intention is viewed as a function of two basic determinants, one personal in nature and the other reflecting social influence (Ajzen, 1988). The personal factor is the individual's attitude toward the behaviour; that is, whether or not the person is in favour or against performing the action. The second, termed subjective norm, is the person's perception of social pressure to perform or to not perform the behaviour under consideration. In the theory of reasoned action, these two components are given empirical weights. The empirical weighting between attitude and subjective norm is expected to vary with the kind of behaviour that is being predicted, with the conditions under which the behaviour is to be performed, and with the person who is to perform the behaviour (Ajzen and Fishbein, 1980). For some behaviours, normative consideration (expectations of friends, family, etc.) may be more important in determining behavioural intentions than are attitudinal considerations (the expected outcomes of the act). For other behaviours, the reverse may be true. When these two determinants are joined together, according to the theory, individuals will intend to perform a behaviour when they evaluate it positively and when they believe that important others think they should perform it.

The theory of reasoned action is now considered one of the most systematic and widely used cognitive approaches to attitude conceptualisation and measurement in marketing (Olson and Zanna, 1993; Bagozzi and Kimmel, 1995; Foxall *et al.*, 1998). The theory is based on the assumption that people are basically quite 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 and Fishbein, 1980; East, 1997). This approach to predicting behaviour therefore views people as essentially rational beings, and the model is thus a statement of individual rationality or "reasoned action".

Whilst the theory of reasoned action has received criticism for its presumed assumption that people engage in elaborate cogitation about consequences prior to taking any action (see Eagly and Chaiken, 1993), Ajzen and Fishbein (1980) defend this criticism by emphasising that their theory does not assume that people scrutinize the determinants of their behaviour prior to each and every behavioural act. Rather, in their view, people

have at some time formed their attitudes toward behaviours by thinking about the consequences of such behaviours. Once an attitude is formed, people need not review these consequences prior to each and every behavioural opportunity.

### ***The Theory of Planned Behaviour***

The theory of reasoned action was developed explicitly to deal with behaviours over which people have a high degree of volitional control (Ajzen and Fishbein, 1980; Ajzen, 1988). However, it is acknowledged that the theory of reasoned action has not been successful when applying it to behaviours that are not fully under volitional control. Namely, it has not been successful when attempting to explain or predict the behaviour of people whose future behaviour depends not only on their attitudes and subjective norms, but also on additional factors that affect their ability to perform, such as the required opportunities and resources (Ajzen, 1985).

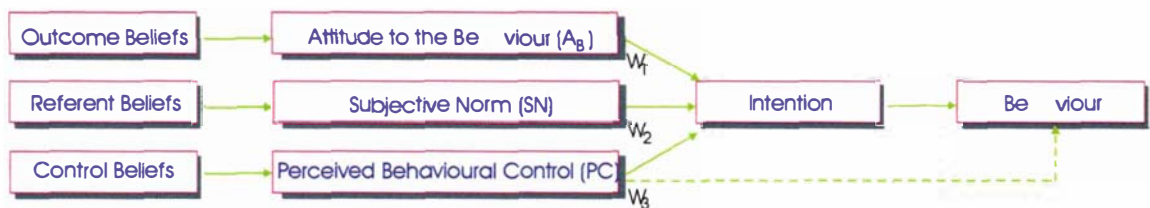
As a result of recognised weaknesses with the theory of reasoned action regarding certain types of behaviour, Ajzen (1985) introduced the theory of planned behaviour. Ajzen (1988) explains, as with the theory of reasoned action, the central factor in the theory of planned behaviour is an individual's intention to perform the behaviour of interest. In contrast to the theory of reasoned action, however, the theory of planned behaviour postulates three, rather than two, conceptually independent determinants of intentions. The first two, attitude toward the behaviour and subjective norm, are the same for both models. The third, and additional antecedent of intention, perceived behavioural control, is described as the perceived ease or difficulty of performing the behaviour if a person wishes to do so.

As explained previously, beliefs are assumed to provide the basis for the formation of attitude toward the behaviour and subjective norms, and as such, all behaviour change must come about through the acquisition of new beliefs or the modification of existing beliefs. A similar assumption exists about beliefs underlying the perceived behavioural control variable. That is, people hold beliefs about factors that either help or hinder their ability to perform certain behaviours. Control beliefs form as a result of the extent to which a person believes the control factor exists multiplied by the extent to which that person believes he or she can control that factor. For example, a belief about, say, buying a house next month, may relate to a person's need for obtaining finance (control

factor), and the perceived ease or difficulty to which this factor is perceived to be controllable (control strength).

Hence, the rationale behind the addition of perceived behavioural control was to improve predictive ability in situations where performance of the behaviour in question is influenced by factors not fully under a person's volitional control (Ajzen, 1988, 1991). That is, however strongly held a person's attitudes may be, and regardless of the extent of influence of important others, for some behaviours the implementation of an intention into action is at least partially determined by personal and environmental barriers (see Figure 2).

**Figure 2 Model of The Theory of Planned Behaviour**



Thus, according to the theory of planned behaviour, as people formulate their intentions, they are assumed to take into account three conceptually independent types of considerations. First, they form beliefs about the likely consequences of a contemplated course of action, which result in a favourable or unfavourable attitude towards performing the behaviour. Second, they take into account the expectations of relevant referent groups or individuals, resulting in the formation of a subjective norm or perceived social pressure to perform or not perform the behaviour. Third, people are assumed to form beliefs about factors that may help or hinder their ability to perform the behaviour, leading to the formation of perceived behavioural control.

Ajzen (1985), contends that as a general rule, the more favourable the attitude and subjective norm with respect to a behaviour, and the greater the perceived behavioural control, the stronger an individual's intention to perform the behaviour under consideration will be. The relative importance of attitude, subjective norm, and perceived behavioural control in the prediction of intention is expected to vary across behaviours and situations and can be found by regression analysis (Ajzen, 1991). Any

other variables are thought to influence intentions through these three variables (Ajzen, 1985).

A notable distinction with the perceived behavioural control variable, however, is that unlike attitude and subjective norm, it is thought to affect behaviour in two ways: indirectly (via intention), and directly (Ajzen, 1985). Thus, one assumption is that the effect of perceived behavioural control is completely mediated by intention, and that intention in turn is the immediate antecedent of behaviour. A second view of the theory of planned behaviour is the possibility that a direct link exists between perceived behavioural control and behaviour, as shown by a broken line in diagram form (see Figure 2). Therefore, it is postulated that in some circumstances, where volitional control is very low, the perceived behavioural control variable should predict behaviour directly without being mediated by intentions, and for other behaviours, perceived behavioural control has an indirect influence on behaviour, which occurs through intentions. The accuracy with which the perceived behavioural control variable predicts does, of course, depend on the assumption that people can accurately represent their actual control over the performance of an action (Armitage and Conner, 2001b).

### ***Application of the Ajzen and Fishbein Models***

Ajzen and Fishbein's attitudinal-based approach to predicting behaviour is credited with having had a pervasive and lasting impact in both psychology and marketing (Bagozzi, 1988). Both the theory of reasoned action, and its more recently extended form, the theory of planned behaviour, have been widely used to investigate a variety of behaviours (Sheppard, Hartwick and Warshaw, 1988; Eagly and Chaiken, 1993; Randall and Wolff, 1994; Bagozzi and Kimmel, 1995; Sutton, 1998).

A large body of support exists for the theory of reasoned action (see, for instance, reviews by Ajzen and Fishbein, 1977, 1980; Sheppard, *et al.*, 1988). Reviews of the theory of reasoned action have found it typically explains around 25% of the variance in behaviour and somewhat less than 50% of the variance in intentions (Sutton, 1998).

Equally well supported, the theory of planned behaviour is considered one of the most widely applied behavioural prediction theories in social psychology and related fields (Sheppard, *et al.*, 1988; Ajzen, 1991; Madden, Ellen and Ajzen, 1992; Eagly and

Chaiken, 1993; Godin and Kok, 1996; Conner and Armitage, 1998; Sheeran and Orbell, 1999). Reviews of the theory of planned behaviour suggest the model can account for 40% to 50% of the variance in intentions and between 19% and 38% of the variance in behaviours (Godin and Kok, 1996; Sutton, 1998).

In East's (1997) view, given the wide range of applications in which the theory of planned behaviour has been tested, it now supersedes the theory of reasoned action. Ajzen provides an up-to-date and comprehensive list of citations, which report the findings of applications of the theory of planned behaviour across a variety of behaviours (<http://www.people.umass.edu/ajzen/tpbrefs>). In particular, studies have found that the theory of planned behaviour performs consistently better than the theory of reasoned action in situations in which behaviour was not considered to be completely under volitional control (Ajzen, 1985; Ajzen and Madden, 1986; Ajzen, 1991; Madden *et al.*, 1992; East, 1993; Conner and Armitage, 1998). For example, Giles and Cairns (1995) compared the theory of reasoned action and the theory of planned behaviour in the context of predicting blood donation. They found that the theory of planned behaviour improved the prediction of behavioural intentions from 31% of the explained variance to 61%. This suggests that there is a control element associated with blood donation, for example, the availability of time necessary to complete the donation process. Thus, the inclusion of the perceived behavioural control variable considerably improves predictions of the intention to perform this behaviour.

The main reason attributed to strong support for Ajzen and Fishbein's approach to predicting behaviour is that they have simplified the research process. Their models identify only two (theory of reasoned action) or three (theory of planned behaviour) variables, the variables are clearly defined, and operationalisation of the models is clearly specified. This has removed some of the ambiguity and confusion that previously surrounded the conceptualisation and measurement of attitudes, and opened the way to formal measurement and testing procedures (Tuck, 1976; Liska, 1984).

However, whilst Ajzen and Fishbein's models are considered an improvement on previous attempts to predict behaviour, both models have their shortcomings (Bagozzi, 1984, 1985, 1988; Netemeyer, Burton, and Johnston, 1991; Eagly and Chaiken, 1993; Sutton, 1997; Gagne and Godin, 2000; Ajzen, 2001a; Armitage and Conner, 2001).

Both models require very precise situational correspondence in order to accurately predict behaviour. It is also acknowledged that although widely used, application of the theory of planned behaviour is quite complicated and there has been disagreement among researchers about the design of questionnaires and the analysis of results (Eagly and Chaiken, 1993; East, 1997; Foxall, 1997; Sutton, 1997). Regarding the operationalisation of the theory of planned behaviour, confusion continues as to whether perceived behavioural control should be measured directly, or indirectly via control beliefs (Manstead and Parker, 1995; cited in Foxall, 1997).

A common objection to Ajzen and Fishbein's approach is their rejection of other variables as behavioural predictors (Tuck, 1976; Sutton, 1997). In response, Ajzen and Fishbein (1980) argue that they are not suggesting that other variables have nothing to do with behavioural predictions. Instead, they argue that the effect of other variables on behavioural intentions is mediated through the main variables of the theories: attitude, subjective norm and perceived behavioural control, or their relative weights. Thus, it is assumed that variables external to the theory of planned behaviour, such as past experience, personality, age, gender, and other social classifications are associated with behaviour only because these factors are related to relevant beliefs leading to the formation of intentions. For example, Ajzen (1991) argues that perceived behavioural control is assumed to reflect past experience as there is often an overlap between these two variables. This is because past experience reveals the situational opportunities and the personal abilities upon which perceived behavioural control is based (East, 1990). Specifically, Ajzen (1991) states,

*Although we do not deny that 'external' variables of this kind may sometimes be related to behaviour, from our point of view they can affect behaviour only indirectly. That is, external variables will be related to behaviour only if they are related to one or more of the variables specified by our theory (p. 82).*

However, perhaps in response to continuing debate about this aspect of the theory of planned behaviour, Ajzen (1991) also explicitly welcomed research that addresses the inclusion of additional variables to improve the predictive ability of the model. He states,

*The theory of planned behaviour is, in principle, open to the inclusion of additional predictors if it can be shown that they capture a significant proportion of the variance in intention or behaviour after the theory's current variables have been taken into account (p. 199).*

Hence, there have been frequent theoretical and empirical attempts to extend the theory of planned behaviour by incorporating additional explanatory variables with the aim of accounting for more of the variance in intentions (East, 1990; Bagozzi and Warshaw, 1990; Sutton, 1998; Leone, Perugini and Ercolani, 1999; Perugini and Bagozzi, 2001). The role of prior behaviour is one variable that has been found to improve the ability of the model over existing variables (Olson and Zanna, 1993; Bagozzi and Kimmel, 1995; Conner and Armitage, 1998; Ouellette and Wood, 1998). Specifically, in the context of exercise behaviour, Norman and Smith (1995) found that prior behaviour was the strongest predictor of future exercise behaviour over a six-month period in comparison to the standard theory of planned behaviour variables. This finding suggests that prior behaviour impacts on later behaviour and this factor is not adequately captured in the included variables, therefore prior behaviour should be added to the model as an independent variable.

Another variable an increasing number of researchers have suggested acts independently from attitude, subjective norm and perceived behavioural control is a measure of moral obligation, also referred to as moral norm and personal norm (Schwartz, 1970; Schwartz and Tessler, 1972; Gorsuch and Ortberg, 1983; Raats, Shepherd and Sparks, 1995; Harland, Staats and Wilke, 1999; Lee, Piliavin and Call, 1999). Moral obligation is defined as a sense that one should act in a particular manner and that failure to do so will produce self-criticism or loss of self-regard. Ajzen and Fishbein (1970) originally included such a measure in their model but later dropped it as it was thought to serve mainly as an alternative measure of behavioural intentions. However, studies have found that independent measures of moral obligation improve behavioural predictions over and above other independent variables. Schwartz and Tessler (1972) found that moral norms were the best predictor of willingness to become a medical transplant donor, leading them to conclude that it was a mistake to drop moral norms from the Ajzen and Fishbein models. Similarly, in the context of blood donation, Pomazal and Jaccard (1976), Zuckerman and Reis (1978), and Armitage and

Conner (2001a) found moral norms contributed to the prediction of donation behaviour over and above attitudes and subjective norm.

Other factors that have attracted considerable attention, and which may account for variance in behavioural intentions beyond that accounted for by the theory of planned behaviour, include habit, self-identity, situational variables, demographic variables and personality variables (Tuck, 1976; Charng, Piliavin and Callero, 1988; Allen, Machleit and Kleine, 1992).

As Ajzen (1991) has suggested, researchers could continue to search for and test additional variables to improve the predictive ability of the theory of planned behaviour. However, as Schwartz and Tessler (1972) stated, the main problem with the 'other variables' approach is that the number of causal variables potentially worthy of consideration is virtually infinite. Alternatively, researchers could instead rethink the entire approach to predicting behaviour. In 1978, on the basis of her wide-ranging review, Mostyn (cited in Foxall, 1997) argued that instead of trying to improve the attitude-behaviour relationship with existing techniques, it would be more productive if researchers could rethink the entire assumptive philosophy underlying the attitude-behaviour relationship, and consider the predictive ability of alternative variables.

The next section explores the view that, rather than continuing to modify and improve current attitude-based models for predicting behaviour, researchers should instead consider an alternative approach to predicting and explaining human behaviour.

### **3.3 AN ALTERNATIVE APPROACH TO PREDICTING BEHAVIOUR**

As explained in the previous section, the approach of using attitudes to predict behaviour has been heavily researched for many years. Attitude clearly remains the central concept on which much human behaviour theory and analysis rests. Certainly, whilst thousands of published articles report findings of attitude-related studies to predict behaviour, by comparison very few report alternative approaches to predicting behaviour.

Yet, despite numerous attempts to resolve earlier concerns, considerable disagreement continues to exist among researchers as to how reliable attitudes really are as behavioural predictors (Netemeyer, Burton, and Johnston, 1991; Kraus, 1995; Sutton, 1998; Wright and Klyn, 1998). Some researchers question the validity of research findings that rely on asking respondents about their beliefs, attitudes and intentions, as opposed to measuring their actual behavioural response (see Liefeld, 1999). Such concerns continue to cast doubt about the exact nature of the relationship between attitude and behaviour and raise the possibility that there is little or no useful relationship between these constructs. Unless it is established that attitude measurements help in the understanding and prediction of human behaviour, their relevance to marketing decision-making remains questionable.

Whilst Ajzen and Fishbein's conceptual framework is credited with advancing the accuracy of behavioural predictions, Foxall (1986, 1997) draws attention to two important weaknesses with their approach. First, he cautions researchers to appreciate that the most significant feature of Ajzen and Fishbein's approach is that it involves the use of highly situation-specific models which are capable of prediction accurately only under the most rigorously specified circumstances. Second, he notes that whilst behavioural intentions are often used to predict behaviour, accurate prediction of behaviour is possible only within relatively short time intervals. Even a temporary delay between assessment of intention and observation of behaviour tends to have a detrimental effect on the prediction of behaviour (Ajzen, 1985; Ajzen and Madden, 1986). Hence, a framework that is moderated by intentions and is limited to short range predictions is, arguably, of marginal practical value (Ryan and Bonfield, 1980; Liska, 1984; Randall and Wolff, 1994).

Foxall does not single out the Ajzen and Fishbein approach *per se* for criticism but suggests that as their approach represents the most sophisticated methodology available to researchers, whatever limitations apply to it will also affect the less sophisticated methods of investigating or predicting behaviour. He notes that the limitations of their approach are made explicit by Ajzen and Fishbein themselves, in terms of the specific circumstances in which their models will predict, however, researchers by and large appear to have overlooked these caveats.

Foxall's (1983) main criticism of consumer behaviour research to date is that when the shortcomings of the central concept 'attitude' become apparent, a researcher's tendency is to attempt to make predictive models such as the theory of planned behaviour more useful by refining analytical techniques or adding variables, rather than seeking a more useful concept. Examination of current research practices certainly suggests that, by and large, researchers continue to opt for a cognitive framework on which to base predictions of future behaviour. In fact, this cognitive framework dominates research practices almost to the exclusion of other developments in behaviour research. Foxall (1997) states, that even when non-attitudinal variables such as situational influences are incorporated into attitude models, "the fixation with attitudes as significant precursors of behaviour is so strong that it almost entirely precludes either a critical awareness of the prevailing perspective or a search for a radical alternative" (p. 3). For this reason he suggests holding in check the overwhelming emphasis on what is "going on inside consumers' heads" and instead considering an alternative approach which may lead to advances in the accuracy of predicting human behaviour.

One avenue of reappraisal of the use of cognitive variables to predict behaviour is to consider an alternative approach based on behavioural variables. Foxall (1986) argues that incorporation of a behavioural approach to predicting behaviour will yield greater dividends than other approaches. For example, advances in ecological psychology in recent years have drawn attention to the ways in which people's behaviour is remarkably consistent in specific settings, regardless of who is performing it, their attitudes, intentions, dispositional traits and motives (Foxall, 1997). The implication of these findings is that it is aspects of the environment in which people live that ultimately shape their behaviours, not internal constructs such as attitudes. In fact, Nord and Peter (1980) maintain that many marketing objectives could be accomplished without psychological theories, by simply studying environmental conditions and manipulating them to influence consumer behaviour.

It is widely accepted that behaviour and attitudes are related, however, dispute arises amongst researchers as to the direction of the causation. A common view is that attitudes cause behaviour, but that the relationship does not work in reverse (Olson and Zanna, 1993). Yet, data has emerged which has demonstrated that under certain conditions attitudes emerge from, rather than direct, behaviour (Tuck, 1976; Fazio and

Zanna, 1981). These findings suggest that attitudes may in fact stem from behaviour rather than vice versa, and therefore future behaviour may be better predicted by past or other behaviour than by attitudes.

Foxall (1983) argues there are good grounds for holding the view that attitude is perhaps dependent on or subsequent to past behaviour. He cites Festinger's (1957) theory of cognitive dissonance and Bem's (1967) theory of self-perception in which individuals change their attitudes to match their behaviour after behaving in ways that were inconsistent with their attitudes. In fact, Foxall (1997) posits that the determinative role of the prior behaviour variable appears to have the potential to modify the paradigm for attitude research, shifting the emphasis from cognitive sources of explanation towards a behaviour-based perspective. Specifically, he states,

*“More than being just an additional influence that increases attitudinal-intentional-behavioural consistency or accounts for inconsistency, prior behaviour has a determinative influence on behaviour in as much as its inclusion in models has direct implications for the predictive and explicative power of cognitive variables and may even render them redundant (p. 43).*

As discussed in the previous section, researchers have demonstrated that inclusion of prior behaviour as an independent variable has improved the predictive ability of the theory of planned behaviour. Yet, overall, very few studies have investigated behavioural influences on human behaviour independent from attitudinal studies. For this reason, Foxall (1997) accuses consumer researchers for the most part of avoiding contact with the environment in which the behaviour they study is contingent.

Similarly, Zaltman and Bonoma (1979; cited in Brown and Fisk, 1984) advanced what they considered to be a lack of “heresy” in marketing thought and practice. In their view, an overwhelming abundance of accepted marketing practice existed, creating a lack of marketing thought and practice offering alternative views. Foxall (1997) notes that, although there has been an appreciable change in marketing thought and practice since Zaltman and Bonoma's article, there remains insufficient thought given to alternative marketing approaches to predicting behaviour. In particular, there remains little understanding of how behaviour is systematically related to the circumstances in

which it takes place. Yet, as Skinner (1977) opined, an explanation for behaviour may rely on events that happen in the environment rather than within the individual.

### 3.3.1 Labaw's Approach to Predicting Behaviour

The essence of the alternative approach to predicting behaviour, introduced in the section above, is also found in a book by Labaw, published in 1980. Labaw proposed a foundation for a systematic theory of questionnaire design, which places much emphasis on the underlying framework of questionnaire development (Gendall, 1998). She views a questionnaire as a problem-solving instrument for which the ultimate goal is to inform decision-making. As such, her approach to questionnaire design is based on the assumption that the objective of most surveys is prediction; for most market research surveys, prediction of consumer behaviour.

Labaw's (1980) approach to questionnaire design developed as a result of her lack of success using the accepted attitudinal approach to predicting behaviour. Labaw does not believe that accurate prediction of human behaviour using attitude concepts is possible using questionnaire techniques. She states,

*Frustrated with the lack of predictability of purely attitudinal questions, and rather stunned by the huge gap between what people say and what they then do, I felt it necessary to re-evaluate the role of these types of questions within surveys and to find alternatives to them which could be used in predicting behaviour. Consequently, attitude questions have become a minute part of surveys I design (p. 32).*

To Labaw, attitudes are often what she refers to as "mere surface manifestations of larger, structural movements beyond the control or even the consciousness of individuals" (p. 82). The inference of this statement is that rather than ask respondents about their attitudes, which they may not understand themselves, it is more helpful to simply ask direct questions about the aspects of their lives upon which their attitudes are based. Labaw's rationale for this approach is that people are much better able to say what they do now and have done previously, compared to what they might do in the future.

An underlying theme of Labaw's approach to predicting behaviour is to determine levels of respondent consciousness. She argues that, as a rule, people have not thought about, and do not know their feelings about most issues that have not directly affected them. Thus it is important to determine how close to the issue or action of interest the respondent is. Closeness for survey purposes is equivalent to firsthand (or fairly direct) personal experience. Accordingly, Labaw's approach to predicting behaviour is to determine respondents' levels of consciousness about the behaviour of interest using experience-related questions. Using an analogy based on blood donation, Labaw's approach suggests that someone who has donated blood knows his or her feelings about blood donation better than someone who hasn't, and similarly, someone who knows someone else who has donated blood has a greater level of consciousness about the topic than someone who doesn't know someone who has donated blood. Hence, she argues, there are various levels of consciousness, depending on a person's level of experience with an action. As a consequence, Labaw's approach to predicting behaviour assumes that someone with greater direct or even indirect experience of blood donation would be more capable of accurately indicating their willingness to donate blood themselves than someone with no experience.

In this sense, Labaw's approach to predicting behaviour, by ascertaining levels of respondent consciousness, mirrors that of Ajzen and Fishbein's approach based on salient beliefs. However, in contrast to Ajzen and Fishbein's approach in which modal salient beliefs obtained from the population of interest form the basis of questionnaire design, Labaw's approach to questionnaire design involves establishing levels of consciousness or salience of each respondent individually, based on his or her personal circumstances and degree of direct experience with the behaviour of interest.

Specifically, Labaw argues that respondent consciousness in relation to the topic or action of interest relates to three aspects of the respondent's life: the environmental influences which are determined by personal circumstances over which people have no control but which may affect their behaviour, their level of knowledge, and their past behaviour. Each component of Labaw's approach to predicting behaviour is discussed in the following sections.

## ***Environmental Influences***

The first component of Labaw's approach to predicting behaviour is the *environment*, which Labaw describes as the physical aspects of people's 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. Whilst Fishbein and Ajzen (1975) claimed that little information is to be gained by consideration of demographic variables, by contrast Labaw argued these aspects are important because they provide greater depth to understanding human behaviour than attitudes, which may be much shorter lived. Sheatsley (1983) agrees that people's attitudes and behaviour are affected by such demographic factors as their sex, age, ethnicity and level of education, and for this reason, almost all surveys routinely include these items.

As discussed in Chapter Two, many researchers have investigated demographic variables as predictors of blood donation behaviour. Whilst consensus has not been reached as to the exact effect of various demographic variables on blood donation behaviour, it is generally accepted that some demographic variables do impact upon people's willingness to donate blood. For example, it is known that young people are more likely to donate blood for the first time, indicating that age is a useful predictor of intention to donate blood, regardless of respondents' attitudes to donating blood. For other types of behaviours, depending on the nature of behaviour involved, a person's income, type of employment, or location of workplace may better predict his or her willingness or ability to act than how the individual thinks or feels about the particular action.

## ***Knowledge***

Labaw refers to the second component in her approach, *knowledge*, as a respondent's level of knowledge about the topic or related action. Whilst definitions of the exact components of knowledge and techniques to measure knowledge may vary, it is generally agreed that an individual's level of knowledge about an action relates to his or her subsequent behaviour to that act (Brucks, 1986; Allen and Butler, 1993; Andreasen, 1995). Sheatsley (1983) concurs that, almost always, a questionnaire should include

some measure of knowledge, so researchers can “distinguish among the well informed, the poorly informed, and the unaware” (p. 203).

Labaw argues that often the way people behave results from what they know about an action, or equally, their behaviour may relate to what they don't know. Hence, based on her approach it could be reasoned that a respondent's level of knowledge about blood donation may have a direct influence on his or her blood donation behaviour. For example, blood donation behaviour may directly relate to whether or not people know there is a shortage of blood donors. This view is supported by an early finding by Drake (1978; cited in Allen and Maddox, 1990), who reported that awareness of the need to have a consistent blood supply was a leading factor in a donor's decision to donate. A more recent Australian study also found a strong positive relationship between knowledge and willingness to donate blood (Adam and Soutar, 1999). Similarly, it was found that people with more accurate knowledge of the consequences of volunteering to be an organ donor are more likely to sign an organ donor card (Perkins, 1987).

### ***Past Behaviour***

The third component of Labaw's approach to predicting behaviour is people's *actual behaviour*; in particular, her approach emphasises the importance of past behaviour as a predictor of future behaviour. Debate frequently arises among behaviour researchers as to the role of past behaviour in determining future behaviour. For example, within Ajzen and Fishbein's conceptual framework, future behaviour is shaped by beliefs, and beliefs are thought to incorporate past experience. However, even proponents of attitude based models such as the theory of planned behaviour have found that people's future behaviour is more accurately determined by measures of past behaviour, compared to those provided by cognitive measures (Foxall, 1997; Sutton, 1998). Sheatsley (1983) agrees that as people are generally poor predictors of their own behaviour, obtaining information about respondents' past behaviour improves predictions of future behaviour.

Based on Labaw's approach, to predict blood donation behaviour it is surmised that questions about previous blood donation behaviour may provide better predictions of future blood donation behaviour than questions which seek to determine a respondent's

underlying cognitive beliefs relating to blood donation. Similarly, questions that relate to other charitable forms of giving, such as a respondent's previous donations to charities, or whether a respondent is registered as an organ donor, may better predict future blood donation behaviour than cognitive measures relating to this behaviour.

Labaw argues that behaviour questions are particularly important in areas where potential future behaviour is under study. In particular, the frequency with which behaviours have been performed in the past tends to correlate well with later actions. Thus, she posits, when designing a questionnaire aimed at determining potential future behaviour, the most important design technique is to include a battery of behaviour questions detailing past and present behaviour that is similar to or related in some way to the potential behaviour under study.

### ***Application of Labaw's Approach***

Bradburn (1983) refers to two distinct types of data. He describes one type as actual or anticipated behaviour of individuals or groups. The other type he describes as psychological states such as thoughts, feelings, beliefs, and opinions that are not directly accessible to anyone but the respondent. He states,

*In the first case, that of behaviour, we can conceive that there is, in principle, a 'true' value even though it may be unobserved. For the second type of data, that which we shall call generically attitudinal data, it is not as clear that there is, even in principle, any true value. Whether or not one conceives of a true value as existing depends on one's theoretical conception of the particular variables (p. 290).*

Similarly, Labaw argues that by replacing attitudinal questions with behavioural questions, it is the researcher not the respondent who analyses and projects meaning from the responses. In Labaw's view, cognitive questions, based on hypothetical situations, often shift the responsibility for analysis from the researcher to the respondent. Instead, she argues the researcher should use questions in which the respondent can accurately describe what he or she does, and in this way, the answers do not require imaginative skill, or projectable consciousness on the part of the respondent. In essence, Labaw concluded that to predict behaviour, attitudinal questions, the

answers to which can never be externally validated, should be replaced by questions that respondents can 'truthfully' answer: that is, questions with a verifiable answer upon which researchers can base predictions of future behaviour.

Like Ajzen's theory of planned behaviour, which measures three determinants of behavioural intention, Labaw's approach also focuses on three components, which she believes provide a means of predicting actual behaviour. Labaw argues that by adopting an approach in which we establish respondents' environment, what respondents know, and their past behaviour, researchers could make better predictions of respondents' behaviour than is possible by measuring their attitudes.

However, unlike attitude approaches in general, and Ajzen and Fishbein's attitude approach in particular, Labaw's alternative approach to predicting behaviour has not been widely operationalised or tested. Numerous studies have been undertaken in which various aspects of Ajzen and Fishbein's approach have been examined and tested, and the results are widely disseminated in the academic literature. By contrast, Labaw's approach is not cited in any of the well-known survey research or questionnaire design texts (Gendall, 1998). Therefore, whilst the essence of her approach to predicting behaviour has received some support in the academic literature, it is not known whether her explicit approach to predicting behaviour, using questions that can be truthfully answered, has greater predictive ability than Ajzen's more widely accepted attitudinal based theory of planned behaviour.

### **3.4 SUMMARY**

Since Wicker first claimed there was little or no connection between attitude and behaviour, attitude research methodology has progressed (East, 1997; Ajzen, 2001a). In particular, Ajzen's (1985) theory of planned behaviour is described as the most sophisticated technique available for behavioural predictions (Foxall, 1986). Yet meta-analyses of research using the theory of planned behaviour show it only explains, on average, between 40% and 50% of the variance in intention, and between 19% and 38% of the variance in behaviour (Sutton, 1997). Sheeran and Orbell (1999) state a key question for researchers who use this model is whether we should be pleased or

disappointed with this level of explanatory power? In their view, it seems implausible to attribute the variance not accounted for to measurement error.

It is accepted that many weaknesses still exist with the theory of planned behaviour (East, 1997; Ajzen, 2001a). In particular, concerns are raised regarding the levels of specificity required, the assumption that behavioural intentions are the immediate antecedents of corresponding overt behaviours, and the limited time interval necessary between stated intentions and predicted behaviour (Foxall, 1997). Eagly and Chaiken (1993) concur that this theory can no longer be regarded as a fully adequate model of attitude-behaviour relations.

One approach to improving predictions of human behaviour is to continue seeking ways to improve the predictive ability of the theory of planned behaviour. Another approach is to develop an alternative model, which identifies variables that are critical, offers better predictive power than the theory of planned behaviour, and can be operationalised with fewer constraints.

Labaw (1980) offers one such alternative approach. Like Ajzen's (1985) theory of planned behaviour, Labaw's approach also provides a systematic approach to questionnaire design, developed explicitly for the purpose of predicting future behaviour. 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 (1985) theory of planned behaviour, based on attitudinal questions.

The next two chapters present the results of a study developed for the purpose of comparing the predictive ability of Ajzen's theory of planned behaviour and Labaw's behavioural approach, within the context of predicting blood donation behaviour. This study is presented in two parts: first Chapter Four presents details of a pilot study designed to test aspects of the research methodology; then the results of a larger study are presented in Chapter Five.

## 4. QUESTIONNAIRE DEVELOPMENT AND PRELIMINARY RESEARCH

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### 4.1 INTRODUCTION

The preceding chapters have examined issues associated with predicting human behaviour in general, and predicting blood donation behaviour in particular. The main research objective that arose from a review of the related literature was to examine the predictive ability of two approaches to predicting willingness to donate blood. The purpose of this chapter is to describe the methodological approach developed to address this objective. Specifically, this chapter begins with a detailed discussion of the issues associated with developing the questionnaire used in this study. Then the preliminary research based on a pilot study undertaken to develop, test and refine various aspects of the survey methodology and questionnaire design is presented.

An earlier study by Giles and Cairns (1995) provided a basis for replication of Ajzen's theory of planned behaviour in the context of predicting blood donation. Hence, aspects of their study served as a comparison to the design and outcome of this study and are reported in this chapter. A similar, and more recent blood donation study by Armitage and Conner (2001a), using an extended version of the theory of planned behaviour (TPB), also provides some basis for comparison with the current study. No studies were available for a similar comparison of Labaw's approach to predicting behaviour.

Questions for the pilot study questionnaire were compiled in two stages. First, the TPB questions were compiled according to the conceptual and methodological considerations detailed by Ajzen (2001b). Then the questions consistent with Labaw's (1980) approach to questionnaire design were compiled.

The data for the pilot study were also collected in two stages. First, qualitative research was undertaken to gather the information needed to develop the belief-based questions that play a central role in the theory of planned behaviour. Second, quantitative research was undertaken to test the questionnaire and survey methodology prior to

undertaking a larger, main study. Issues relating to the major study are discussed in the next chapter.

## 4.2 DESIGNING THE TPB QUESTIONS

The TPB model uses two types of predictor variables to predict behavioural intentions. The first is *direct* measures of attitude toward the behaviour, subjective norm, and perceived behavioural control. The second is *indirect* (belief-based) measures, which represent corresponding beliefs for each direct measure.

Whilst Ajzen does specify conceptual and methodological considerations for the design of a TPB questionnaire, there is no standard set of TPB questions. For each separate research project it is necessary to undertake formative research to construct a questionnaire suitable for the behaviour and population of interest (Ajzen, 2001b). Details of the process followed to design the direct and indirect TPB questions used in this study are provided in the following sections. (A copy of the final questionnaire used for the pilot study appears in Appendix D.)

### 4.2.1 Overview of the Questionnaire Design Procedure

Ajzen (2001b) suggests the following steps for constructing a TPB questionnaire:

1. Determine the action of interest.
2. Establish the target group.
3. Select questions to obtain direct measures of attitude toward the behaviour, subjective norm, perceived behavioural control and behavioural intention.
4. Select indirect (belief-based) questions following an elicitation process:
  - ❖ Elicit the salient beliefs, referents for the action, and perceived control factors for taking the action. This involves:

- Questioning members of the target group about the advantages and disadvantages and other associations of the defined action.
  - Questioning members of the target group about people or groups who might influence their decision regarding the defined action.
  - Questioning members of the target group about factors that might influence the degree of control they have regarding the defined action.
- ❖ Compile a list of modal salient beliefs.
  - ❖ Select the most frequently mentioned responses to form the belief-based questions.
5. Ensure all direct and indirect measures are directly compatible with the behaviour in terms of target, action, context and time elements (TACT).

#### **4.2.2 Target, Action, Context and Time (TACT)**

Ajzen and Fishbein (1977) stress that whether the behaviour is measured using direct measures or indirect belief-based measures, it is necessary for the measures to be directly compatible with the behaviour in terms of target, action, context and time elements (TACT). Ajzen (2001b) describes this as observing the principle of compatibility, which requires that all variables be defined in terms of exactly the same elements. For the purpose of this study, TACT was defined as follows:

- ❖ Target (the focus or object of the action) - blood donation.
- ❖ Action – the respondent personally donating blood.
- ❖ Context – when the New Zealand Blood Service visits the campus.
- ❖ Time – next week.

In addition, as suggested by Ajzen, many questions were personalised with the inclusion of terms such as “for me” or “I personally”.

### 4.2.3 Direct Measures

Questions were designed to obtain direct measures of attitude toward the behaviour, subjective norm, perceived behavioural control and behavioural intention. For each question, respondents were asked to circle the number on a seven-point semantic differential scale (unipolar 1-7), which best described their feelings or beliefs. This approach mirrors the questionnaire design reported by Giles and Cairns (1995) for their earlier blood donation study. The following sections detail the selection of questions for each of the four TPB measures.

#### *Attitude toward the Behaviour*

Ajzen (2001b) states that any standard attitude scaling procedure can be used to obtain a respondent's evaluation of his or her attitude toward a behaviour, however, mainly due to its ease of construction the semantic differential is most commonly used. Yet, it is acknowledged that the semantic differential is not a generalised attitude measurement scale. That is, there is not a recognised set of bipolar adjective scales that apply universally to the measurement of all behaviours. It is noted, however, that unlike most other bipolar adjective scales, the *good-bad* scale is found to capture overall evaluation very well, irrespective of the concept under consideration (ibid.) Therefore, a good-bad scale is generally included in theory of planned behaviour questionnaires. Usually, additional scales are used to cover those situations where people have mixed feelings about an action. A rule of thumb is to select a further two to four measures that are evaluative in nature and which contain two components. Ajzen describes one component as instrumental in nature, represented by such adjective pairs as *valuable-worthless*, and *harmful-beneficial*. The second component represents an experiential quality, which Ajzen suggests is reflected in such scales as *pleasant-unpleasant* and *enjoyable-unenjoyable*.

Earlier blood donation studies by Pomazal and Jaccard (1976) and Zuckerman and Reis (1978), using the theory of reasoned action, measured direct attitude with the following three direct attitude measures: good-bad, pleasant-unpleasant and nice-awful. Giles and Cairns (1995), who used the TPB to investigate blood donation behaviour, report using the following six direct attitude measures: pleasant-unpleasant, nice-awful, good-bad, enjoyable-nauseated, like-dislike and satisfied-dissatisfied. In a more recent blood

donation study using an extended version of the TPB, Armitage and Conner (2001a) also used six items to measure direct attitude: good-bad, harmful-beneficial, unpleasant-pleasant, negative-positive and unenjoyable-enjoyable.

To obtain a measure of direct attitude for this study, respondents were presented with the following statement and three item measures that were considered most appropriate for this particular study:

*For me, donating blood when the New Zealand Blood Service comes to the campus next week is:*

*rewarding* \_7\_ | \_6\_ | \_5\_ | \_4\_ | \_3\_ | \_2\_ | \_1\_ *unrewarding*  
*extremely quite slightly neither slightly quite extremely*

*good* \_7\_ | \_6\_ | \_5\_ | \_4\_ | \_3\_ | \_2\_ | \_1\_ *bad*  
*extremely quite slightly neither slightly quite extremely*

*pleasant* \_7\_ | \_6\_ | \_5\_ | \_4\_ | \_3\_ | \_2\_ | \_1\_ *unpleasant*  
*extremely quite slightly neither slightly quite extremely*

Prior to finalising the pilot questionnaire, a pre-pilot questionnaire was tested with 20 respondents. This version of the questionnaire presented six direct attitude measures selected from previous blood donation studies. The number of direct attitude measures was later reduced to three, consistent with studies by Pomazal and Jaccard, and Zuckerman and Reis, due to concerns about respondent fatigue given the overall length of the questionnaire.

As more than one scale was used, scale reliability was assessed by means of the alpha correlation, which produced a value of .69. This compares with a value of .89 obtained by Giles and Cairns (1995).<sup>5</sup>

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<sup>5</sup> Disagreement exists among researchers about the necessity for high correlations to occur when using composite scales. For example, it can be both good and unpleasant to donate blood. Whilst each dimension could be measured separately (see Ajzen and Driver, 1991), for comparative purposes, an alpha correlation value is provided.

Whilst semantic differential scales are typically presented with the end point adjectives counterbalanced to present in positive, followed by negative randomisation, this aspect of the theory of planned behaviour methodology was not adhered to. Instead, the three scales were presented with positive and negative endpoints in the same direction. The reason for this delivery style is that when the questionnaire was pre-tested, respondents were confused by the counter-balanced presentation order, which hindered their ability to evaluate the scales. It was therefore determined that ease of respondent understanding of the requirements of the questionnaire should override standard TPB questionnaire delivery for this aspect of the study. Interestingly, the results obtained from this study were very similar to those obtained by Giles and Cairns, who did counterbalance the endpoints of the direct attitude scales.

### ***Subjective Norm***

The pilot questionnaire included two direct measures of subjective norm (SN). Respondents were asked to indicate how they believed important referents expected them to act with regard to giving blood, using likely/unlikely scale dimensions. Thus, each respondent evaluated the following commonly-used TPB statements, adapted to suit the TACT requirements for this study:

*Most people who are important to me think that I should donate blood when the NZBS visits the campus next week.*

*The people in my life whose opinions I value think that I should donate blood when the NZBS visits the campus next week.*

As suggested by Ajzen (2001b), the different items were separated and presented in non-systematic order, interspersed with items for the other direct constructs.

The two questions produced an alpha reliability value of .84. As Giles and Cairns used only one measure of SN (the first of the two statements listed above), they did not report an alpha reliability value.

### ***Perceived Behavioural Control***

The pilot questionnaire included two direct measures of perceived behavioural control (PBC), selected from measures used by Giles and Cairns in their previous blood donation study. Thus, each respondent evaluated the following statements along a seven-point evaluative scale:

*For me, donating blood when the NZBS visits the campus next week is: measured using easy/difficult scale dimensions.*

*If I wanted to, I could easily donate blood when the NZBS visits the campus next week: measured using likely/unlikely scale dimensions.*

These questions were separated and asked at different points in the questionnaire, as suggested by Ajzen. The two questions produced an alpha reliability value of .71. The internal consistency reported by Giles and Cairns for three PBC scales was .70.

### ***Behavioural Intention***

Two measures of behavioural intention were used in the pilot study. These questions were selected from measures used in previous theory of planned behaviour studies, including Giles and Cairns' earlier blood donation study. At the start of the TPB stage of the questionnaire, respondents were asked to evaluate the following intention statement using a seven-point likely/unlikely scale:

*I intend to donate blood when the New Zealand Blood Service visits the campus next week.*

Later in the questionnaire, prior to a section asking demographic questions, respondents were asked to evaluate a second intention statement using likely/unlikely dimensions:

*I will donate blood when the New Zealand Blood Service visits the campus next week.*

The two questions produced an alpha reliability score of .95, indicating high internal consistency. As Giles and Cairns used only one measure of behavioural intention, an alpha reliability value was not reported. However, Armitage and Conner (2001a), who used five measures of behavioural intention, reported an alpha reliability value of .96.

#### **4.2.4 Indirect (Belief-Based) Questions**

According to Ajzen's (1985) theory, direct attitude measures, direct subjective norm measures, and direct perceived behavioural control measures are shaped by underlying related beliefs. Thus, attitude toward a behaviour is shaped by outcome beliefs, subjective norm is shaped by referent beliefs, and perceived behavioural control is shaped by control beliefs. However, Ajzen stresses that this explanatory function relates only to salient beliefs, that is, beliefs that are readily accessible in memory. Therefore, it is essential when designing a TPB questionnaire that includes indirect measures to undertake pilot work to identify accessible behavioural, normative, and control beliefs. This involves using an elicitation procedure whereby a sample of the population of interest is asked a series of questions about the positive and negative associations of the concept or of performing the behaviour. Respondents are first given a description of the behaviour and are then asked a series of questions to elicit their salient beliefs. The modal salient beliefs, or those most commonly referred to, are used in the final TPB questionnaire.

##### ***Elicitation Process to Obtain Salient Beliefs***

Following Ajzen's (2001b) 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 to identify people or groups who think they should donate blood, and about their abilities and opportunities that make the action of donating blood easier or harder to perform.

Specifically, salient beliefs were elicited from a sample of 30 students and staff from Massey University early in 2001. A pre-pilot questionnaire was developed, using open-ended questions to obtain responses about the respondents' beliefs regarding:

- ❖ Reasons why people might, or might not, donate blood when the NZBS visits the campus.
- ❖ Which individuals or groups might influence a person's decision to donate blood when the NZBS visits the campus.
- ❖ What factors or circumstances might help or hinder a person's decision to donate blood when the NZBS visits the campus.
- ❖ Other personal associations or issues that come to mind about donating blood when the NZBS visits the campus.

For example, respondents were asked the following question:

*What reasons can you think of for people donating blood when the New Zealand Blood Service comes to the campus?*

Responses were recorded and respondents gently prompted for further responses. However, as cautioned by East (1990), it was important to not press respondents too hard for responses as it is only the most salient, or top of mind, responses that should be sought. Fishbein and Ajzen (1975) acknowledge that it is impossible to determine the exact point at which a person starts to elicit non-salient beliefs. Earlier research on attention span, apprehension, and information processing suggests that an individual is capable of attending to or processing only five to nine items of information at a time (Woodworth and Schlosberg, 1954; Miller, 1956; Mandler, 1967; all cited in Fishbein and Ajzen, 1975). On this basis, Fishbein and Ajzen, recommend that, as a rule of thumb, indirect measures be primarily determined by no more than five to nine beliefs.

All responses were grouped into similar response themes and the most commonly-cited responses were used to form the belief-based questions. A copy of the questionnaire used to elicit salient beliefs, and a list of compiled responses are provided in Appendix B. Many of the responses obtained from the elicitation process were similar to, or identical to, those used by Giles and Cairns, who in turn had selected beliefs which were elicited previously by Pomazal and Jaccard (1976) and Burnkrant and Page (1988).

The elicitation process resulted in the selection of seven belief-based attitude measures, three belief-based referent measures, and three belief-based control measures.

### ***Belief-based Questions***

When applying the TPB model, beliefs are measured using two scales: one scale measures the strength of the belief (usually denoted as  $b$ ); for example, the strength of the belief that donating blood will result in losing time from work or study; and the second scale represents an evaluation of that outcome (usually denoted as  $e$ ); for example, the extent to which the belief that losing time from work or study is viewed as a good thing or a bad thing. To obtain an overall measure, each belief strength is multiplied by the corresponding belief evaluation and the resulting products are summed. Hence, an indirect measure of attitude toward the behaviour is determined by the following equation:

$$A_B = \sum b_i e_i.$$

Thus, in accordance with standard procedure for the design of a TPB questionnaire, two questions were asked in association with each belief. For each question respondents circled one number on a unipolar (1-7) semantic differential scale. As suggested by Ajzen (2001b), respondents were first required to evaluate each belief outcome, and at a later stage in the questionnaire, the corresponding belief strength was assessed.

For example, for indirect attitude, the following belief outcome evaluation was asked:

*Fulfilling a social responsibility is:*

good 7 | 6 | 5 | 4 | 3 | 2 | 1 bad  
extremely quite slightly neither slightly quite extremely

followed later in the questionnaire by the corresponding belief strength:

*If I donate blood when the New Zealand Blood Service comes to the campus next week, I will fulfil a social responsibility.*

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

The summed product of each belief strength multiplied by each belief outcome served as a belief-based (indirect) measure of attitude.

A similar process was used to obtain an indirect measure of subjective norm (SN). One statement assessed the strength of respondents' normative beliefs (usually denoted as  $n$ ), and a corresponding statement assessed their motivation to comply with each referent (usually denoted as  $m$ , for motivation to comply). As suggested by Ajzen (ibid.), motivation to comply statements were presented first, followed later in the questionnaire by statements to measure the strength of the respondents' normative beliefs. For example, the following statement assessed motivation to comply with a referent:

*I want to do what my friends or colleagues think I should do:*

likely\_\_7\_\_|\_\_6\_\_|\_\_5\_\_|\_\_4\_\_|\_\_3\_\_|\_\_2\_\_|\_\_1\_\_unlikely  
*extremely quite slightly neither slightly quite extremely*

followed later in the questionnaire by the corresponding normative belief strength:

*My friends or colleagues think I should donate blood when the New Zealand Blood Service comes to the campus next week.*

likely\_\_7\_\_|\_\_6\_\_|\_\_5\_\_|\_\_4\_\_|\_\_3\_\_|\_\_2\_\_|\_\_1\_\_unlikely  
*extremely quite slightly neither slightly quite extremely*

The summed product of each normative belief multiplied by the corresponding motivation to comply served as a belief-based (indirect) measure of subjective norm. That is, an overall belief-based measure of subjective norm was obtained by applying the expectancy-value formula as shown in the following equation:

$$SN = \sum n_i m_i$$

Indirect measures of perceived behavioural control were also obtained using paired statements. First, respondents were asked to indicate their ability to control factors that may facilitate or impede the act of donating blood (usually denoted as  $p$  for control belief power), and later in the questionnaire they were asked to indicate the strength of their control beliefs (usually denoted as  $c$ ). For example, the following statement was used to assess control belief power:

*I can easily find out when the New Zealand Blood Service is coming to the campus.*

likely\_\_7\_\_|\_\_6\_\_|\_\_5\_\_|\_\_4\_\_|\_\_3\_\_|\_\_2\_\_|\_\_1\_\_unlikely  
extremely quite slightly neither slightly quite extremely

followed later in the questionnaire by the corresponding statement to measure control belief strength:

*I can donate blood more easily if I know when the New Zealand Blood Service is coming to the campus.*

likely\_\_7\_\_|\_\_6\_\_|\_\_5\_\_|\_\_4\_\_|\_\_3\_\_|\_\_2\_\_|\_\_1\_\_unlikely  
extremely quite slightly neither slightly quite extremely

The summed product of each control belief strength multiplied by the corresponding control belief power served as a belief-based (indirect) measure of perceived behavioural control. Thus, using an expectancy-value formulation as depicted by the following formula, a belief-based measure of perceived behavioural control was computed:

$$PBC = \sum c_i p_i.$$

#### **4.2.5 Additional Variables**

In addition to the standard theory of planned behaviour variables, two additional variables were incorporated into the questionnaire design.

To assess willingness to donate blood, an additional dependent variable, the Juster eleven-point probability scale, was included to measure each respondent's probability of donating blood the following week. The Juster probability scale is not a standard measure associated with either the TPB or Labaw's approach to predicting behaviour. Nevertheless, this measure was included as an additional measure of the behaviour in question due to some success with its use in other areas of market research (see, for instance, Juster, 1966; Day, Gan, Gendall and Esslemont, 1991; Esslemont, Hamilton-Gibbs and McGuinness, 1992; and Brennan, 1995). However, this variable did not improve predictions of donating blood when compared with the other dependent variables used and therefore was not included in the major study.

A measure of perceived moral obligation was also obtained. Moral obligation is considered to have an important influence on the performance of those behaviours with a moral or ethical dimension, and to work in parallel with attitude, subjective norm and perceived behavioural control (Conner and Armitage, 1998). Earlier blood donation studies by Pomazal and Jaccard (1976) and Zuckerman and Reis (1978) found that inclusion of this variable improved the predictive ability of the theory of reasoned action, and more recently, Armitage and Conner (2001a) reported a similar finding using an extended version of the theory of planned behaviour.

Whilst it was not a specific objective of this study to extend Ajzen's theory of planned behaviour, given that the inclusion of a moral obligation variable has improved blood donation predictions in previous studies, it was deemed appropriate to include this additional variable. Like the other direct measures used in this study, the moral obligation statement was presented using a seven-point likely-unlikely scale, and it was grouped among the other direct measures. Specifically, respondents were asked to rate moral obligation with the following statement used previously by Pomazal and Jaccard, but modified to suit the name of the New Zealand blood collection agency:

*I personally feel I have a moral obligation to donate blood when the New Zealand Blood service comes to the campus next week.*

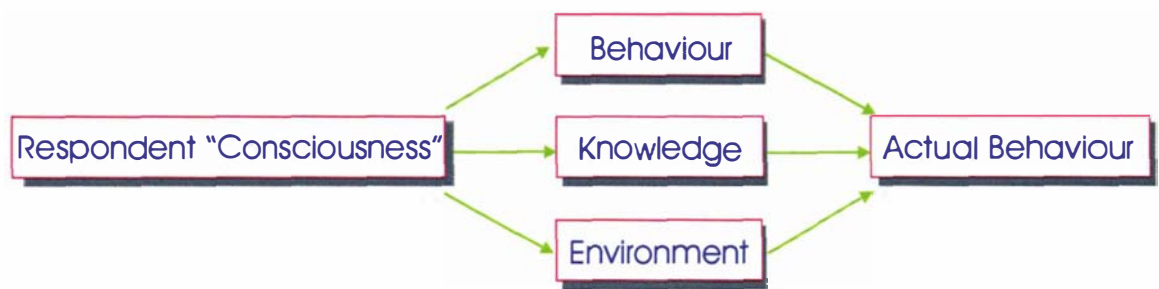
#### **4.3 DESIGNING THE LABAW QUESTIONS**

According to Labaw (1980), behaviour is determined by three types of predictor variables that, in theory at least, can be measured objectively. Her approach to questionnaire design is implemented by asking questions about relevant aspects of the respondents' environment, knowledge about the behaviour of interest, and current and past behaviour. Questions relating to these three aspects, which can be answered 'truthfully' by respondents, thus provide the basis for designing a 'Labaw' questionnaire. An overriding consideration when formulating questions based on Labaw's approach is the extent to which the questions reflect a respondent's level of direct awareness or experience (consciousness) with the behaviour of interest.

### 4.3.1 Overview of the Questionnaire Design Procedure

Unlike Ajzen's theory of planned behaviour, for which a clearly prescribed approach to questionnaire design already existed, there was no similarly prescribed methodology available to guide questionnaire design for Labaw's approach. Figure 3 presents a model that was developed for the purpose of operationalising Labaw's approach to predicting behaviour.

**Figure 3 Model of Labaw's Approach to Predicting Behaviour**



According to this model, actual behaviour is predicted by asking a series of questions relating to three components: respondents' past and current behaviour, their knowledge, and their environment. Each component of the model is influenced by respondents' level of 'consciousness', or degree of direct or indirect involvement with the behaviour of interest.

Based on this model, four steps were followed when developing the Labaw-type questions. The first two steps are identical to Ajzen's approach to questionnaire design. The remaining two steps are unique to Labaw's approach to questionnaire design.

1. Determine the action of interest.
2. Establish the target group.
3. Consider levels of respondent consciousness relating to the behaviour of interest:
  - ❖ Undertake a thorough information search to identify key factors associated with the behaviour of interest.

4. Develop questions relevant to the behaviour of interest which relate to a respondent's:

- ❖ Past and current behaviour
- ❖ Knowledge
- ❖ Environment

To implement the steps above, it is necessary for researchers to be knowledgeable about relevant aspects of the behaviour of interest and the target population. This may require researchers to undertake a detailed preliminary investigation to equip themselves with the information necessary to write appropriate questions. For example, the questionnaire development process may involve a researcher seeking information from a range of sources, such as talking to experts who work in the field of the behaviour of interest, reviewing published information from academic or trade sources, and seeking publicly available material from the library or the Internet.

With regard to the knowledge component, Labaw argues that some of the knowledge a person holds results from that person's current behaviour or experience with the action. Moreover, she posits that one's personal knowledge derived from firsthand experience differs from factual knowledge derived from reading, or from indirect exposure through friends and family and, furthermore, people with indirect knowledge of the behaviour of interest differ from those with no knowledge. Therefore, to ascertain the effect of knowledge on behaviour, it is necessary to gauge the depth of understanding of an issue or problem by determining the nearness of a respondent to it through actual experience or levels of experience.

The process of selecting Labaw-type questions for this study involved undertaking a thorough search of the academic blood donation literature, talking with representatives from the New Zealand Blood Service, and gaining additional information from the New Zealand Blood Service's Internet website. Following the information search stage, relevant questions were developed for each of the three components identified in Figure 3. The following sections detail the question selection process for each component of Labaw's approach to predicting behaviour. (A copy of the final questionnaire used for the pilot study appears in Appendix D.)

### 4.3.2 Behaviour Questions

To ascertain respondents' prior experience with the behaviour of interest they were asked questions relating to their previous blood donation experience. This involved establishing whether they had ever donated blood, and if so, the extent of their blood donation experience in terms of frequency of donations and the recency of their last donation. No distinction was made between respondents' actual donation experiences and their attempted donation experiences. Sometimes a donor may attempt to donate blood but be declined for various reasons. Thus, whether respondents had actually donated or simply attempted to donate blood, for the purpose of this study it was deemed that their intent was the same, regardless of the outcome.

Additional behaviour questions were selected on the basis that prior blood donation research had suggested a potential link between the behaviour and willingness to donate blood. These questions related to respondents' experience with the receipt of donated blood or blood products, either personally or indirectly; whether they had friends or family members who had ever donated blood; whether they had agreed to become a potential organ donor; and their experience with other types of donation behaviour (for example, the extent of their financial contribution to charitable organisations)<sup>6</sup>.

For each behaviour question, respondents were presented with relevant options and were asked to indicate which option best applied to them. For example, the following behaviour question was asked:

*Has a member of your family ever donated blood?*

*Circle ONE only*

*Yes.....1*

*No.....2*

*Not sure.....3*

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<sup>6</sup> This variable was not included in the final analysis as there was insufficient variation in the sample to provide meaningful results. Nearly 90% of respondents made either no charitable donations each year, or made donations of less than \$100.

Some further questions were included in the pilot questionnaire to investigate reasons given by respondents for their donation or non-donation behaviour. Whilst providing background information suitable for comparison with prior blood donation research that has investigated donor motivation, these questions did not relate directly to the main objectives of the study and were not included in the analysis reported in this chapter.

### **4.3.3 Knowledge Questions**

Knowledge as a concept has been defined, conceptualised, and measured in various ways, and no commonly accepted definition or measure of knowledge exists (Brucks, 1985; Brucks, 1986; Alba and Hutchinson, 1987; Flynn and Goldsmith, 1999). Given this situation, this component of Labaw's approach to predicting behaviour proved the most difficult to operationalise.

When designing knowledge questions, there are two important issues to consider: first, selection of the actual questions used to measure knowledge, and second, whether to use an open or closed question format. The following sections include discussion of both general issues relating to the process of determining 'knowledge', and issues specific to this study; namely, the selection of questions used to measure blood donation knowledge and the choice of question format used.

#### ***Knowledge Question Selection***

Selection of the actual questions designed for the purpose of measuring knowledge involves consideration of what constitutes 'knowledge' of the topic being investigated. The first decision to make is whether the list of questions selected captures the important aspects of respondents' knowledge about that topic. The issue is whether an important element of knowledge has been omitted from the set of questions developed or whether an unimportant element has been included. 'Knowledge', therefore, is ultimately defined by the questions included or omitted from the questionnaire designed to measure it.

The process of selecting the knowledge questions used for this study involved detailed preliminary discussion with representatives from the New Zealand Blood Service. They

were asked what knowledge factors they believed contributed to a person's decision to donate blood, or conversely, to not donate blood. Whilst this process could not guarantee that the most important knowledge questions were included in the questionnaire, seeking opinions from those closely involved with blood donation in New Zealand at least provided a logical basis for determining the essential components of blood donation knowledge. For example, most of the questions selected for this aspect of the study appear as 'frequently asked questions' in blood donation information leaflets prepared by the NZBS. Thus, these are the same questions that donors themselves seek answers to when considering whether to donate blood.

Eight knowledge questions were included in the pilot study (refer to Appendix D for details of the exact question wording). The topics addressed respondents' knowledge of:

*Their own blood type.*

*Eligibility criteria for potential donors.*

*How frequently a donor can donate blood.*

*How much blood is collected at each donation.*

*The percentage of New Zealand's population who donate blood.*

*The frequency with which the NZBS visits the campus.*

*Where on campus potential donors can donate blood.*

*How long the donation process takes<sup>7</sup>.*

The following prompt was included in the questionnaire to encourage respondents to attempt each question:

*If you don't know the answer to any of these questions, please still attempt the question by providing your best guess at what you think the answer is.*

Whilst it is acknowledged that some correct responses may have in fact been obtained by guesswork rather than by applying knowledge, asking respondents to attempt the question avoided a situation in which many questions were left unanswered due to lack

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<sup>7</sup> This question was not included in the final analysis as interpretation of the question varied among respondents as to whether the estimated time included the pre-donation screening process and the post-donation recovery time, or just the time required to actually donate blood.

- ❖ of confidence by the respondent to attempt the question, even when they did in fact know the answer.

### ***Knowledge Question Format***

Having selected the questions that were deemed to define ‘knowledge’ for the purpose of this study, the next stage of the questionnaire design process involved a decision regarding the use of an open-ended approach to question design versus the use of a closed question format. Some discussion of the factors involved in each question type follows.

An example of a typical closed question would be as follows:

*What proportion of New Zealanders donate blood?*

*4%*

*10%*

*20%*

*50%*

*Don't Know*

This particular question includes a ‘don’t know’ option to allow for uncertainty, but respondents could be forced to choose from a range of options without an option for uncertainty (see Mondak, 2001, for a detailed discussion of this issue).

Asking True-False questions, or asking respondents to consider Agree-Disagree statements are other options for measuring knowledge. Thus, another way of asking the above question is:

*The proportion of New Zealanders who donate blood is 10%.*

*True*

*False*

*Don't Know*

In this case, respondents can either draw on their pre-existing knowledge to answer the question, or equally, they can take a guess at the question with a reasonable chance at success.

An obvious advantage of using a set of closed questions is that coding is simplified. Another advantage, for respondents, is that it allows them to draw upon differing degrees of knowledge to assist their selection amongst the options offered. This relates to what Krosnick (2002) describes as the “feeling of knowing”. Krosnick states this phenomenon occurs when a person fails to recall the answer to a question such as, ‘*What is the capital of North Dakota?*’, but claims to be able to recognise the correct answer among an offered set of choices. That is, when people have this feeling of knowing, and the related ‘tip-of-the-tongue’ phenomenon, they in fact may possess the required information in memory but temporarily cannot gain conscious access to it.

Thus, when a respondent fails to mention an answer it does not necessarily mean that he or she does not possess the answer. Arguably, therefore, it seems logical to ask knowledge questions in a way that encourages respondents to provide any degree of knowledge they possess even if they cannot provide an accurate response to a question. For example, respondents may know that few people donate blood and therefore choose the lowest percentage from the range of percentages offered and correctly answer the question. However, what is not clear is whether a different range of alternatives would result in different knowledge scores. For example, if respondents are aware that few people donate blood, they may take an educated ‘guess’ that the correct answer from the selection provided is 4%. Yet, if the list of options included another lower percentage, such as 2%, this makes it more difficult for the respondents to select from the available options if their knowledge is imprecise.

The alternative to closed questions is open-ended questions. Labaw advocates the use of open-ended questions for knowledge measurement on the grounds that they give respondents the opportunity to “have their own say”. But an important criticism of open-ended questions is the difficulty of constructing meaningful variables for statistical analysis from the responses generated by them. Coding of open-ended questions is extremely difficult and demands professional levels of knowledge of the issue being researched, and it is necessary for the coder to be well versed in what is an

acceptable answer. For example, to be eligible to donate blood in New Zealand, a donor must not have spent more than six months in the United Kingdom between January 1980 and December 1996 due to risk of infection with Creutzfeldt-Jakob Disease (CJD). If a response to the question of why a donor would not be eligible to donate alluded to this criterion but was not totally correct, judgement is necessary when coding the level of knowledge the respondent possesses. In other words, the respondent may be somewhat aware of a connection between blood donation and CJD but not be knowledgeable enough to be more specific about the actual eligibility criterion.

Thus, an advantage of using an open-ended question format is that it is possible to code different levels of knowledge based on the answers given. A respondent giving a somewhat correct answer would receive a lower knowledge score than a respondent who more clearly demonstrates a link between CJD, the United Kingdom, and blood donor eligibility. What is more difficult to determine is whether variation in responses given simply depends on whether a person is willing or unwilling to expend the cognitive effort required to undertake a memory search (Dillman, 1978).

Another issue that arises when using open-ended questions is whether they measure respondents' top-of-mind awareness or their factual knowledge. If a respondent made no mention of, say, ineligibility to donate blood within six months of receiving a tattoo or body piercing, it cannot be determined if the respondent was unaware of this criterion, or simply omitted to mention it but would have done so if presented with a selection of options. Nevertheless, had respondents been offered a list of eligibility criteria and been asked to indicate whether the criteria presented were true or false, it would be equally difficult to decide whether the respondent 'knew' the eligibility criteria, or simply took an educated 'guess'.

Sheatsley (1983) argues that the main advantage of open-ended questions is they allow respondents to answer from their own frames of reference, entirely uninfluenced by any specific alternatives suggested by the interviewer. He also argues that open-ended questions reveal what is most salient to respondents, or what things are foremost in their mind. Closed questions may suggest answers that respondents may not have thought of before, and may not permit them to express the exact shade of their meaning. The identification of variation in degrees of understanding is an important aspect of Labaw's

use of knowledge questions. Hence, notwithstanding the limitations detailed in this section, it was deemed appropriate to test the knowledge component of Labaw's approach to predicting behaviour using mostly an open-ended question format.

#### **4.3.4 Environment Questions**

Unlike Ajzen and Fishbein's approach to questionnaire design, where factors relating to a respondent's environment are thought only to impact on behaviour indirectly via the main variables of their models, Labaw's approach involves considering the impact of environmental factors on behaviour directly.

For this study the following demographic variables were included:

*Age*

*Gender*

*Education*

*Ethnicity*

*Age of youngest child*

*Employment status*

Four of the above variables were not included in the final analysis: education status, ethnicity, age of youngest child and employment status. Whilst these variables have been found to contribute to blood donation behaviour in previous studies, there was insufficient variation in the largely student sample used for this study to enable meaningful analysis of the results. For example, in terms of employment status, 84% of respondents were full time students, with a similar percentage reporting that they have no children. Similarly, there was little variation in the sample in regards to education status, and most donors (73%) described themselves as European or part-European, with the remaining associations spread among smaller ethnic groupings. This left *age* and *gender* as the only 'environmental' variables included in the main study.

## **4.4 SAMPLING AND SURVEY METHODOLOGY**

### **4.4.1 Sample Composition**

Following a similar research design and sample size to the study by Giles and Cairns (1995), the data for this pilot study were collected from a convenience sample of 100 students and staff from Massey University's Turitea campus in Palmerston North in 2001<sup>8</sup>. Regular mobile blood collection drives are made to this location. Although this sample was not representative of all blood donors it was, nevertheless, selected from a population with a high proportion of potential donors. Student populations are commonly targeted by blood collection agencies (Nonis, Ford, Logan and Hudson, 1996), consequently, drawing a convenience sample from a campus population is a research method that is commonly reported in blood donation studies (see, for instance, Kazdin and Bryan, 1971; Osborne and Bradley, 1975; Cialdini and Ascani, 1976; Pomazal and Jaccard, 1976; Foss and Dempsey, 1979; Bagozzi, 1981; Piliavin, Calero and Evans, 1982; Lipsitz, Kallmeyer, Ferguson and Abas, 1989; Ferrari and Leippe, 1992; Nonis *et al.*, 1996; Armitage and Conner, 2001a).

Whilst it is acknowledged that a donor sample selected from one geographical area only within New Zealand could differ in some way to donors or potential donors selected from other geographical regions in the country, there was no evidence available from the NZBS to suggest that data collected from, say, Auckland or Dunedin, would produce a different result to data collected in Palmerston North. Furthermore, to reiterate, the main objective of this study was to compare the differences between two approaches, rather than to generalise the results to a wider population.

### **4.4.2 Sample Selection**

Interviewing took place on the main concourse of Massey University's Turitea campus in Palmerston North. The concourse site was selected as it is a public area of the campus with outdoor seating where students and staff gather throughout the day.

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<sup>8</sup> Giles and Cairns' study reported a sample size of 141, selected from a university population.

Respondents were randomly selected to take part in this survey. Potential respondents were approached by an interviewer, informed that the survey was about blood donation, and that the research was being carried out as part of a PhD study in the Department of Marketing. Potential respondents were advised that the survey would take approximately 15 minutes, and then asked if they would be willing to take part.

The response rate for this survey was very high, approximately 90%, which is similar to the response rate reported by Bagozzi (1981) for a study which also used a sample drawn from a university population. The high response rate is most likely related to the inherent interest shown in the topic by respondents (although some respondents first needed assurance that the interviewers were not attempting to recruit blood donors). In addition, the university concourse is primarily used for the purpose of relaxation, therefore potential respondents also had time available to take part in a survey. Nearly all refusals to take part in the survey were by potential respondents who did not have sufficient time available because of approaching lecture times.

#### **4.4.3 Interviewer Recruitment and Training**

Interviewing for the pilot study was undertaken by the principal researcher and author of this thesis, with assistance from two postgraduate students recruited from the Department of Marketing. Prior to interviewing in the field, the research assistants were trained to familiarise them with the different questionnaire versions. As the principal researcher was on hand during interviewing, further assistance was available to the interviewers if required.

#### **4.4.4 Questionnaire Delivery**

One self-completion questionnaire was used, which included questions based on each of the two approaches to questionnaire design. Two versions of the questionnaire were developed. One version included questions specific to respondents who had previously donated, or attempted to donate blood, and one version included questions specific to respondents who had no prior donation experience. The remainder of the questions for each version were identical for all respondents.

Following a brief introduction by the interviewer, respondents were asked two face-to-face questions by the interviewer; first, whether they personally had ever donated, or attempted to donate blood, and second, whether they were aware that the NZBS would visit the campus the following week. Depending on how the respondent answered question one (that is, whether or not the respondent had previously donated blood, or attempted to donate blood), the interviewer then handed the respondent the appropriate version of the questionnaire and asked him or her to self-complete the remainder of the questions. Space was provided at the end of the questionnaire for respondents to comment about any aspects of blood donation in general, or the survey in particular. While the survey was filled in, the interviewer remained close-by to assist the respondent if any queries arose. When the completed questionnaire was returned to the interviewer, the respondent was thanked for his or her time and the interview was terminated.

#### **4.4.5 Question Order**

Prior to finalising the pilot questionnaire, pre-testing was undertaken with a convenience sample of 20 respondents. Respondents were asked about ease of question understanding, ease of response to the answer categories provided, and their overall response to the questionnaire delivery style used.

During this pre-testing stage respondents indicated that the most appropriate question delivery style was to present the Labaw questions first, followed by the TPB questions. The Labaw questions clearly flowed on from the blood donation topic introduced to the respondents at the time of gaining their consent to be interviewed. Due to the more prescribed nature of the question wording used for the TPB questions, it was ascertained that introducing these questions first would have required a more detailed introduction to the questionnaire and greater explanation of what was required of respondents.

#### **4.4.6 Interview Context and Timing**

The New Zealand Blood Service undertakes mobile drives to selected venues, including many tertiary institutes, at regular intervals throughout the year. This service provides an alternative opportunity for donors to donate blood at a venue other than the main

hospital location. Consistent with the earlier study by Giles and Cairns (1995), interviewing took place one week prior to a scheduled campus visit by the NZBS.

The NZBS visits Massey University's Turitea campus three times a year, in March, June, and September. These scheduled visits to the campus provided the rationale for interviewing potential donors from a university population, as this ensured that Ajzen's requirement for the principle of compatibility was observed. That is, respondents were quite clear of the focus, or object, of the action (blood donation), the action (the respondent personally donating blood), the context (when the NZBS visits the campus), and the timeframe (next week). Whilst these same TACT requirements could have been met using a general opportunity to donate at any blood donation venue within a specified timeframe, the clearly defined specifications of the mobile drive visit to the campus provided a very clear context within which to measure the behaviour.

Furthermore, as an integral part of the methodology developed for this study involved contacting willing respondents after the mobile drive was completed to ascertain their reported donation behaviour, having a clearly defined blood donation opportunity to donate enhanced this aspect of the study.

#### **4.4.7 Obtaining Self-Reported Behaviour**

On the final page of the questionnaire respondents were asked to indicate whether they were willing to provide contact details should the interviewer have any further questions at a later date. A space was provided for respondents to provide their name, telephone number and email address. Forty two percent of respondents were willing and provided contact details. These respondents were contacted by phone or email shortly after the drive and asked whether they had donated blood, or attempted to donate blood, when the NZBS had visited the campus.

If contact with respondents wasn't achieved with the initial attempt, follow up emails or phone calls were made for up to one month following the mobile blood drive. For example, if a response was not obtained by an initial email, a reminder email was sent two weeks later to those who had not replied. If an email reply was not received within a further week, attempts were then made to contact respondents by telephone. In some

instances it was necessary to make regular attempts to contact respondents by telephone due to the number being engaged, or the respondent being unavailable at the time of contact. Telephone calls were spread throughout the day to increase the likelihood of contacting the respondent. Within a one-month timeframe, contact to establish the respondents' reported donation behaviour was achieved with all respondents who had provided their contact details.

Nineteen percent of respondents who were contacted indicated that they had donated, or attempted to donate, blood. Whilst it is acknowledged that a reported behaviour measure rather than an actual behaviour measure was obtained, it is important to note that this figure is consistent with the proportion of New Zealand's population who donate blood. Nationally, the figure reported by the New Zealand Blood Service of actual donors is approximately four percent. It could reasonably be expected that the population of donors within a university would be higher than the population percentage due to the fact that the university population is on average younger, and younger people are more likely to donate blood for reasons reported in Chapter Two.

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, 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 was consistent with that reported by Giles and Cairns (1995), who also contacted respondents during the week following a blood drive. Moreover, in a similar study, Pomazal and Jaccard (1976) obtained intentions to donate blood, and one week after the blood drive contacted all respondents by phone to ask if they had donated blood. They then compared self-reports of behaviour with a list of persons who had donated blood as compiled by the blood collection agency officials. Pomazal and Jaccard reported there was no discrepancy at all between self-reports of behaviour and actual behaviour. This finding offers further support for the methodology used in this study. Furthermore, if respondents were sensitised by the research process adopted for this study, the predictive ability of both approaches tested would be equally affected.

## 4.5 CODING AND ANALYSIS

### 4.5.1 Coding the TPB Questions

#### *Direct Measures*

All direct measures of attitude, subjective norm, perceived behavioural control and intention were coded 1 to 7 as per each respondent's response. Where more than one scale was used, the scales were summed and averaged to obtain a direct measure, as reported in previous studies (see, for instance, Schifter and Ajzen, 1985; Ajzen and Driver, 1991).

#### *Indirect (belief-based) Measures*

Whilst it is standard practice to use unipolar (1 to 7) scales when presenting TPB questionnaires to respondents, there is no standard practice to follow when coding the indirect TPB responses. That is, an issue relating to the measurement of indirect measures is whether to code using bipolar scoring, from -3 to +3, or unipolar scoring from 1 to 7. Ajzen (2001b) states that there is no a priori way to determine the proper scaling of belief strength and outcome evaluation. When the responses to the paired scales are multiplied, either positive or negative values are produced, depending on the scoring method used. Moving from unipolar to bipolar scoring, or vice versa, can have a substantial impact on the correlation between belief-based and direct measures. This aspect of the TPB has been problematic, and has resulted in a range of approaches reported (East, 1990; Evans, 1991). East (1993) investigated this problem and concluded that a realistic and conservative approach is to regard scale ranges of -3 to 3 and 1 to 7 as alternatives and to use the best. Similarly, Ajzen (2001b) suggests examining the correlation between belief-based and direct measures of attitude and adopting the scoring scheme (unipolar or bipolar) that produces the better result. This arbitrary approach to scaling can be extended further when it is applied to all beliefs of a kind, because the optimum scaling can also vary among beliefs (East, 1993; Ajzen, 2001b).

For this study, the same approach was adopted as reported by East (2000) in which scale combinations were compared and the combinations which resulted in the highest correlations between the indirect variable (e.g. indirect attitude) and the corresponding direct variable (i.e. direct attitude) were selected for the final analysis. This necessitated investigating four alternative scale combinations. Scale combination comparisons for each of the indirect variables and the resulting correlations with direct variables are reported in Appendix E.

The best result was achieved by recoding all indirect attitude outcome evaluations to bipolar coding, recoding all normative belief strengths to bipolar coding, and, for all other measures, retaining unipolar coding.

#### **4.5.2 Coding the Labaw Questions**

##### ***Behaviour Questions***

Standard coding practice was followed for coding the behaviour questions. For example, for yes or no options, yes was coded 1 and no was coded 0. Not sure options were also coded 0. Where a range of options was provided in answer to a question, coding was entered from say, 4 = I am a regular blood donor, to 1 = I have attempted to donate blood but was unable to do so.

For two behaviour questions, where respondents were asked first whether they personally had ever received donated blood, and then later, whether anyone else they knew had received donated blood, the responses were too low to analyse separately so the questions were combined into one variable.

##### ***Knowledge Questions***

A knowledge score was obtained for each respondent based on his or her response to seven knowledge questions: six open ended questions and one closed question. Scoring for each question was from 0 to 2, which allowed a total possible knowledge score of 14. The steps taken to code responses to the questions and create a knowledge score are outlined below.

The six open-ended knowledge questions that contributed to the overall knowledge score are listed below. Beneath each question is the correct answer obtained from information publicly available from the NZBS at the time the survey was undertaken.

*How often do you think a blood donor can give blood?*

- Answer: Every 3 months.

*Approximately, how much blood do you think a blood donor gives at each donation?*

- Answer: 470 mls.

*What percentage of New Zealand's population do you think currently donates blood?*

- Answer: (approx.) 4%.

*How many times does the New Zealand Blood Service visit the Turitea campus each year?*

- Answer: 3 times a year.

*In which building is the New Zealand Blood Service located when it visits the Turitea campus?*

- Answer: The Massey University Students Association (MUSA) building.

*For what reasons is a donor NOT eligible to give blood?*

- Answer: Numerous eligibility criteria apply to this question (see Appendix E). Examples of eligibility criteria include:

*If the donor, or any of the donor's current (or past) sexual partners have (had) AIDS or a positive test for HIV he or she is unable to donate blood.*

*A donor cannot donate blood within six months of receiving a tattoo or body piercing.*

For the first five open-ended knowledge questions listed above, respondents' answers were coded as follows:

*0 = low (or no) knowledge*

*1 = some knowledge*

*2 = good knowledge*

To apply these coding criteria it was necessary to devise a coding index for each question based on the correct answer, and make a subjective assessment of each respondent's answer in relation to the correct answer (see Appendix E). For example, to answer the question "*How often do you think a blood donor can give blood? Every \_\_\_\_\_ months*", respondents recorded their answer in the space provided. Answers were coded using the following guidelines:

*2 = 3 months*

*1 = 2 months or 4 months*

*0 = <2 months or >4 months*

For some questions, respondents provided a wide range of answers, making analysis more difficult. A decision had to be made whether a response constituted 'good knowledge', compared to 'some knowledge', or 'low knowledge'. For example, the correct answer to the question, '*What percentage of New Zealand's population do you think currently donates blood?*' is (approx.) 4%. Only 12 % of respondents gave the correct answer to this question, with answers ranging from 1% through to 75%. In this particular example, those respondents who answered with a percentage less than 10% were judged to have 'good' knowledge, those who answered with a percentage between 10% and 20% were judged to have 'some' knowledge, and those who answered with a percentage over 20% were judged to have 'low' knowledge.

For the question '*For what reasons is a donor not eligible to give blood?*' a two-step coding process was followed, which differed from the coding process explained above. Respondents were asked to list as many reasons as they could why a donor could not donate blood. First, each individual response was coded, and then a respondent's total

score for this question was recoded to ensure the weighting for this question was equal to the other knowledge questions.

There are numerous reasons why a blood donor may be either temporarily barred from donating blood, or permanently barred from donating blood. For coding purposes, respondents' responses to reasons why a donor might not be eligible to donate blood were matched to publicly available information about eligibility criteria (obtained from the NZBS hospital rooms, or online from the NZBS website at <http://www.nzblood.co.nz>). In addition, to accurately code this question, some information was obtained by contacting the NZBS staff directly and discussing eligibility criteria in greater detail than the information usually made available in NZBS leaflets and information packs.

Each eligibility criterion mentioned by a respondent was coded according to the degree of 'accurate knowledge' demonstrated as determined by the NZBS guidelines for that criterion. Specifically, each response was coded as follows:

*3 = good knowledge*

*2 = reasonable knowledge*

*1 = vague or indirect mention of correct answer*

*0 = incorrect eligibility criterion*

For example, if a donor has spent more than six months (in total) in the United Kingdom between 1 January 1980 and 31 December 1996 he or she will no longer be able to donate blood. A respondent who demonstrated accurate (or near accurate) knowledge of this eligibility criterion was deemed to have 'good knowledge', and received a knowledge score of 3. A respondent who indicated some knowledge of this eligibility criterion, for example, relating to travel to the UK, or the CJD disease, but was not too sure of the exact criterion received a score of 2 to indicate 'reasonable' knowledge. An example of a 'vague or indirect response' was the answer 'mad cow disease'. It was deemed that the respondent was aware of a connection between CJD and blood donation eligibility but was not sure of the exact eligibility criterion. This response was coded 1. This coding process will have inevitably resulted in some degree of subjectivity, but simply illustrates the point that meaningful coding of open-ended

knowledge questions relies heavily on a researcher's skill and judgement. Furthermore, a researcher's own level of knowledge of the topic for which he or she wishes to construct a knowledge score plays a vital role in the overall quality of the 'knowledge' data produced.

If respondents listed incorrect eligibility responses, these were coded 0. For example, the response '*person is overweight*' does not relate to an eligibility criterion specified by the NZBS.

The donor eligibility question produced a range of individual knowledge scores from 0 to 21. This range was recoded using the following guidelines:

*2 = 10 or higher*

*1 = 5 to 9*

*0 = 4 or less*

In addition to six open-ended knowledge questions, one knowledge question, which ascertained respondents' knowledge of their own blood type, used a closed question format. Respondents were asked '*What is your blood group?*' and responded by placing a tick next to their blood group if they knew this, or else answering with a 'not sure' option. Those who ticked one of the eight blood groups listed were judged to know their blood group and were coded 2, consistent with correct responses to the other knowledge questions, and those who ticked the 'not sure' option were coded 0.

Finally, to quantify each respondent's knowledge of blood donation, an additive knowledge score was constructed by summing the scores for each of the seven knowledge questions. This resulted in a range of possible scores between zero and fourteen. The range of actual knowledge scores obtained was from 2 to 14.

Needless to say, a different outcome would have been achieved if the different 'components' of knowledge had been differentially weighted. That is, if one aspect of knowledge has a greater impact on respondents' willingness to donate blood than another (say, knowing that the percentage of people who donate blood is very low compared with knowing how often the blood service visits the campus), this factor is

not addressed with equal question weighting. Again, this is a decision that lies with the researcher and which can materially affect the quantification of knowledge for an individual respondent.

### ***Environment Questions***

Standard coding practice was followed for coding the environment questions. For example, where a range of options was provided in answer to a question, such as '*Which category best describes your highest education qualification?*', a corresponding range of coding options was applied, from say 1 = no formal education qualification to 6 = a post-graduate qualification.

## **4.6 RESULTS**

The predictive ability of Ajzen's theory of planned behaviour and Labaw's approach was compared, investigating both *behavioural intentions* and *actual (self-reported) donation behaviour* as the dependent variables. In this section, correlations between selected measures are examined; this is followed by discussion of the relative importance of selected variables. Discussion of behavioural intention to donate blood, using linear regression, is presented first, followed by an investigation of actual (self-reported) donation behaviour, using logistic regression.

### **4.6.1 Correlations**

Correlations between the direct and indirect TPB variables, and the two dependent variables are displayed in Table 4.1. For comparative purposes, Table 4.2 displays corresponding correlations reported by Giles and Cairns (1995) for their earlier blood donation study.

**Table 4.1 Correlations Between Selected TPB Measures (Current Study)**

Variables	Intention	Direct Attitude	Indirect Attitude	Direct SN	Indirect SN	Direct PBC	Indirect PBC
Direct Attitude	.37**	-					
Indirect Attitude	.24*	.38**	-				
Direct SN	.37**	.37**	.21*	-			
Indirect SN	.38**	.18	.34**	.61**	-		
Direct PBC	.70**	.33**	.20*	.27**	.19	-	
Indirect PBC	.59**	.12	.22*	.32**	.42**	.44**	-
Actual Behaviour	.29	.10	.11	.22	.25	.27	.11

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

The strongest relationship with behavioural intention is with the perceived behavioural control variable ( $r = .70$ ). This finding suggests that the extent to which respondents feel they can control the factors that help or hinder their ability to donate blood is more closely associated with the formation of behavioural intentions than either their attitude or the normative influence of important others. The next strongest relationship with behavioural intentions is with the indirect perceived behavioural control variable ( $r = .59$ ).

It is of interest that a strong relationship was not found between the actual behaviour variable and the behavioural intention variable ( $r = .29$ ). It is also of interest that the relationship is not strong between the direct and indirect measures of attitude ( $r = .38$ ), and perceived behavioural control ( $r = .44$ ). The strongest relationship between direct and indirect measures is with subjective norm ( $r = .61$ ).

**Table 4.2 Correlations Between Selected TPB Measures (Giles and Cairns study)**

Variables	Intention	Direct Attitude	Indirect Attitude	Direct SN	Indirect SN	Direct PBC
Direct Attitude	.55*	-				
Indirect Attitude	.09	.14	-			
Direct SN	.22*	.12	.24*	-		
Indirect SN	.26*	.11	.05	.28*	-	
Direct PBC	.73*	.44*	.10	.11	.29*	-
Actual Behaviour	.75*	.39*	.14	.31*	.19*	.55*

\*. Correlation is significant at the 0.05 level (2-tailed).

Note: Giles and Cairns did not report correlations with indirect perceived behavioural control.

Unlike the correlations reported for the current study in Table 4.1, the strongest relationship with behavioural intention for the Giles and Cairns study is with actual behaviour ( $r = .75$ ), followed by the direct PBC variable ( $r = .73$ ). Overall, the correlations with actual behaviour are stronger for the variables reported by Giles and Cairns in Table 4.2 than for the corresponding correlations reported in Table 4.1. On the other hand, the correlations between the direct and indirect TPB variables for the current study are higher than the corresponding measures reported by Giles and Cairns.

Correlations among the Labaw variables were also examined and highly correlated variables were removed from the final analysis (see Table 4.3).

**Table 4.3 Correlations Between Selected Labaw-Type Measures**

Variables	Intention	Knowledge Score	Aware of Visit	Ever Donated	Donor Category	Donation Frequency	Last Donation	Ever Received	Family Member	Someone Else	Organ Donor	Age	Gender
Knowledge Score	-.04	-											
Aware of Visit	-.12	.19	-										
Ever Donated	.31**	.28**	-.03	-									
Donor Category	.40**	.28**	.03	.86**	-								
Donation Freq.	.24*	.30**	-.05	.81**	.85**	-							
Last Donation	.27**	.33**	.03	.78**	.81**	.75**	-						
Ever Received	.00	.04	.20*	.18	.08	.20*	.13	-					
Family Member	.04	-.01	-.01	.20*	.21*	.27**	.13	.08	-				
Someone Else	.04	.07	.00	.07	.11	.07	.12	-.09	-.06	-			
Organ Donor	.13	.33**	.20*	.16	.25*	.28**	.17	.04	.06	-.02	-		
Age	.03	-.04	-.16	.17	.19	.25*	.13	.08	.10	-.19	-.03	-	
Gender	.09	.06	.01	.18	.21*	.10	.15	.11	.07	.06	.08	.00	-
Behaviour	.29	.22	.11	.24	.28	.21	.48**	.18	.21	.03	.28	-.14	.09

\*\* . Correlation is significant at the 0.01 level (2-tailed). \* . Correlation is significant at the 0.05 level (2-tailed).

Four ‘behaviour’ variables were highly correlated, with values ranging from  $r = .75$  to  $r = .86$  (significant at the 0.01 level): *ever donated* (donor or non-donor), *donor category* (categorisation of a respondent’s level of blood donation experience from very little to very experienced), *donation frequency* (how many times a respondent has donated) and *last donation* (the recency of a respondent’s last donation). The variable *last donation* was retained and is included in the analysis reported in Table 4.3. The remaining Labaw variables were not highly correlated and were entered into the regression equation.

#### 4.6.2 Predicting Behavioural Intention

Table 4.4 presents the  $R^2$  and Beta values for behavioural intentions from linear regression analyses of both the original study by Giles and Cairns, and this replication study. Results from both the direct and the indirect measures of the TPB are detailed, and the table also includes the variables from Labaw’s approach that are statistically significant ( $p < .10$ ).

**Table 4.4 Behavioural Intention<sup>9</sup>**

Variables	TPB (Giles & Cairns Study)		TPB (Current Study)		Labaw
	Direct ( $\beta$ )	Indirect ( $\beta$ )	Direct ( $\beta$ )	Indirect ( $\beta$ )	
PBC	.608***	.715***	.612***	.495***	-
SN	.114**	.052	.191**	.129	-
Attitude	.253***	.034	.093	.130	-
Last Donation	-	-	-	-	.309***
Knowledge Score	-	-	-	-	-.183*
<b>R<sup>2</sup></b>	<b>.60</b>	<b>.54</b>	<b>.52</b>	<b>.36</b>	<b>.13</b>

\*\*\*  $p < .01$     \*\*  $p < .05$     \*  $p < .10$

The  $R^2$  values for the direct TPB variables for both the Giles and Cairns study and the current study were similar, with  $R^2 = .60$  reported for the original study compared with

<sup>9</sup> Note: The variables included in Table 4.4 differ from those reported previously by Holdershaw, Gendall and Wright (2003) as additional variables, which were included in their original analysis, were excluded from the analysis reported in this section.

$R^2 = .52$  for this 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 (SN)*. By contrast, *attitude* was a better explanatory variable than *SN* for the Giles and Cairns study, but this finding was reversed for the current study. These findings support the earlier study by Giles and Cairns, 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.

The comparison of  $R^2$  values between studies for the indirect TPB variables was less similar than for the direct measures, with  $R^2 = .54$  reported for the original study compared with  $R^2 = .36$  for this replication study. However, once again, *perceived behavioural control* was a better explanatory variable than the other two indirect TPB variables, *attitude* and *subjective norm*. For the Giles and Cairns study, *indirect subjective norm* was a better explanatory variable than *indirect attitude*, but there was little difference in explanatory power between these variables for the replication study. Overall, the indirect TPB variables offered less explanatory power than the direct TPB variables for both studies.

An additional variable, *moral obligation*, was entered into the regression equation to ascertain whether this would improve the predictive ability of the TPB model over and above the standard direct TPB variables. Correlations with other direct TPB variables were  $r = .53$  (with SN),  $r = .44$  (with attitude) and  $r = .24$  (with PBC). Addition of this variable slightly increased the explained variance with  $R^2 = .55$  with the *moral obligation* variable included compared to  $R^2 = .52$ , without this additional variable. The PBC variable was a better explanatory variable ( $\beta = .603$ ) than the *moral obligation* variable ( $\beta = .223$ ). However, it is of interest that the *moral obligation* variable was a better explanatory variable than the other two standard TPB variables, *attitude* ( $\beta = .029$ ) and *subjective norm* ( $\beta = .104$ ).

Comparison of the TPB direct and indirect variables and Labaw's (1980) approach found that both types of TPB variables from the two studies were better predictors of behavioural intentions than the Labaw variables, with  $R^2$  values of .60 and .52 (direct

variables) and .54 and .36 (indirect variables) reported for the TPB studies, compared with  $R^2 = .13$  for the Labaw approach.

The Labaw variables, *last donation* and *knowledge score*, provided the best fit with the model, with the variable *last donation* providing the greatest explanatory power. That is, the more recently a respondent last donated blood, the more willing he or she was to donate blood again. This finding is consistent with previous blood donation research, which has found that most of the blood donated comes from repeat donors. The other statistically significant Labaw variable, *knowledge score*, was negatively correlated suggesting that the more respondents knew about the blood donation process, the less willing they were to donate blood.

### 4.6.3 Predicting Behaviour

Binary logistic regression was used as the analytic tool to investigate donors' reported donation behaviour. As stated in the series editor's introduction to the text "Logistic Regression: A Primer",

*Logistic regression has pretty much come to replace ordinary least squares (OLS) regression as the data analytic tool of choice when the equation to be estimated has a dichotomous dependent variable. Even beginners know that OLS is simply 'not done', or at least not published, when Y is binary (Pampel, 2000, p. v).*

As explained by Pampel, each set of coefficients represents the effects of a unit change in the independent variables on the logged odds of belonging to each category (coded as 1) relative to the reference category (coded as 0). Each independent variable affects the logged odds of each category relative to the reference category. The logistic regression coefficients show the change in the odds of experiencing an event or having a characteristic for a one-unit change in the independent variables. The coefficients have exactly the same interpretation as the coefficients in regression except that the units of the dependent variable represent the logged odds (expressed as the exponent of the logistic regression coefficients). For the exponentiated coefficients, a coefficient of 1 leaves the odds unchanged, a coefficient greater than 1 increases the odds, and a

coefficient smaller than 1 decreases the odds. Thus, the more distant the coefficient from 1 in either direction, the greater the effect in changing the odds.

The results of the logistic regression analyses using *actual (self-reported) behaviour* as the dependent variable are presented in the following tables, beginning with the TPB direct measures, which are shown in Table 4.5. Whilst Giles and Cairns reported collecting actual donation behaviour data, their results for this measure were not included in their analysis, therefore no comparative results are reported below.

**Table 4.5 Actual Behaviour: TPB Direct Variables**

Predictor Variable	Coef	SE Coef	P-value	Exp (B)
Direct PBC	1.036	.502	.039	2.817
Direct SN	0.770	.463	.096	2.160
Direct Attitude	-0.664	.716	.354	0.515

\* Nagelkerke R<sup>2</sup> value is .36

\* Log-Likelihood = -13.525; G = 9.7, d.f. = 3, P-value = 0.022

The most important variable in predicting respondents' blood donation behaviour was *perceived behavioural control*. The odds ratio indicates that for every one-unit increase in perceived control of the factors that help or hinder their ability to donate blood, respondents were 2.8 times more likely to report that they had donated blood. This finding is based on the assumption that the distance between points on the semantic differential scales used to measure the TPB variables are of equal distance.

The next most important variable in predicting blood donation behaviour was *subjective norm*. For every one-unit increase in normative influence that respondents experienced, those respondents were nearly 2.2 times more likely to report that they had donated blood. The remaining variable in the equation, *attitude toward the behaviour*, was not significant at the 0.10 level. However, the negative coefficient indicates that a one-unit increase in respondents' attitude to donating blood, meant they were less likely to report having donated blood. This finding is unexpected and not consistent with the theory of planned behaviour as it is hypothesised that the more favourable one's attitude toward the behaviour, the more likely one is to act in accordance with that attitude. A possible explanation for this finding is that a filtering question was not in place to exclude

respondents from the survey if they knew they were ineligible to donate blood. For example, those with a positive attitude toward donating blood may have spent time in the UK, which prevented them from donating blood even if they felt favourably disposed toward the behaviour. However, this explanation does not explain why the same finding did not occur with behavioural intentions reported in the previous table, given the fact that behavioural intentions are presumed to be the immediate antecedents of the corresponding overt behaviour.

As a further test of the model, *moral obligation* was added to the equation. This variable was not significant at the 0.10 level. However, the direction of the coefficient was negative, indicating that a one-unit increase in moral obligation to donate blood led to respondents being less likely to report that they had donated blood.

Next, the importance of the TPB indirect variables in explaining willingness to donate blood was considered. The results are reported in Table 4.6.

**Table 4.6 Actual Behaviour: TPB Indirect Variables**

Predictor Variable	Coef	SE Coef	P-value	Exp (B)
Indirect SN	.043	.035	.212	1.044
Indirect PBC	.004	.010	.689	1.004
Indirect Attitude	.004	.023	.859	1.004

\* Nagelkerke R<sup>2</sup> value is .10

\* Log-Likelihood = -18.887; G = 2.7, d.f. = 3, P-value = 0.441

None of the three indirect theory of planned behaviour variables was significant at the 0.10 level and there was very little difference in importance among the variables. The exponentiated coefficients for all three variables are close to 1, which indicates that a one-unit change in measurement of these three independent variables had little effect on respondents' willingness to donate blood.

The analysis was repeated using the Labaw type variables. The results are reported in Table 4.7.

**Table 4.7 Actual Behaviour: Labaw Variables**

Predictor Variable	Coef	SE Coef	P-value	Exp (B) <sup>10</sup>
Last donation	1.271	0.584	.029	3.563
Age	-.179	0.117	.127	0.836
Ever received blood	1.492	1.302	.252	4.448
Family member ever donated	1.727	1.561	.268	5.626
Organ donor	1.268	1.528	.407	3.555
Someone else ever donated	-1.099	1.640	.503	0.333
Knowledge score	-.099	0.293	.736	0.906
Aware of visit	.227	1.400	.871	1.255
Gender	-.010	1.117	.993	0.991

\* Nagelkerke R<sup>2</sup> value is .52

\* Log-Likelihood = -12.160; G = 16.6, d.f. = 9, P-value = 0.056

The most important variable in determining respondents' actual donation behaviour was *last donation*. Respondents who had donated blood recently were 3.5 times more likely to have reported donating blood than those with less recent donation experience. The other variables in this equation are not significant at the 0.10 level but, of course, the sample size was only 42. However, the direction of the coefficients will be discussed because they provide insights into the factors affecting respondents' willingness to donate blood. As stated by Pampel (2000) "despite the common reliance of studies on statistical significance (and the sign of the coefficient) as the dominant means of interpreting logistical regression coefficients, *p* values should serve only as an initial hurdle to overcome before interpreting the coefficient in other ways" (*p.* 31).

Age has a negative coefficient, which indicates that younger respondents were more likely to donate blood than older donors. For every one-year increment in age respondents were less likely to report that they had donated blood. This finding is consistent with previous blood donation findings, as explained in Chapter Two. Respondents who had ever received donated blood or blood products were more likely

<sup>10</sup> Because the ranges and standard deviations of the three variables *last donation*, *knowledge score* and *age* differ, the percentage change in odds for a one standard deviation change was calculated, to make the coefficients more comparable (for each variable, the standard deviation was multiplied by the logistic regression coefficient, and then the exponential of the product was found). However, 'standardising' the variables made relatively little difference to the values of their exponentiated coefficients, therefore non-standardised values are reported in Table 4.7.

to donate blood than those who had not. Moreover, respondents who had a family member who had ever donated blood were also more likely to have reported donating blood themselves than those who did not. Respondents who had ticked the box on their driver's licence indicating willingness to become a potential organ donor were more likely to report that they had donated blood than those who were not potential organ donors. Respondents who were aware that the New Zealand Blood Service would visit the campus the following week were also more likely to have reported that they donated blood than those who were unaware.

Whilst having a family member who has ever donated blood improved the likelihood of a respondent donating blood themselves, knowing others, such as friends and colleagues who donate blood, meant that a respondent was less likely to donate blood him or herself. Furthermore, the more a respondent knew about blood donation, the less likely he or she was to donate blood. Gender does not appear to determine the decision to donate blood as the exponentiated coefficient for this variable is close to 1.

## 4.7 CONCLUSIONS

The purpose of the pilot study described in this chapter was to develop, test and refine various aspects of the survey methodology and questionnaire design, in preparation for the larger study to follow. This preliminary study produced results similar to the Giles and Cairns (1995) study it set out to replicate for the purpose of testing the TPB methodology. The similarity of results between the two studies suggests that the pilot study successfully tested the theory of planned behaviour. Follow-up contact gave a sample size of 42 for analysing actual (self-reported) behaviour. Whilst the pilot sample was too small to report any definitive results about donor behaviour, the results of the pilot study do allow some conclusions to be drawn about research in this area.

Looking first at the theory of planned behaviour, for both behavioural intention and actual (self-reported) behaviour, the strongest finding was provided by a direct measure of *perceived behavioural control*. Next, the *subjective norm* variable was significant at the .10 level for both the behavioural intention model and the actual behaviour model, and the coefficients were in the hypothesised direction. However, the *attitude* variable

was not significant for predicting either behavioural intention or actual behaviour, and for predicting actual behaviour, the coefficient was not in the hypothesised direction. This finding suggests that respondents' attitude towards donating blood is not as important as the degree of control they perceive they have over the factors that help or hinder their ability to act, or the degree of influence of significant others in the decision to donate blood.

For the Labaw approach, the variable *last donation* provided the best fit for both the behavioural intention model and the actual (self-reported) behaviour model. For the actual behaviour model, the variables *ever received blood*, *family member ever donated*, and *organ donor*, whilst not significant at the  $p = <.10$  level, had coefficients that were in the expected direction. The coefficient for the variable *knowledge score* was negative, which indicated that the more respondents knew about blood donation the less likely they were to donate blood themselves. It is not clear what part knowledge of the blood donation process plays in a respondent's decision to donate blood. It could be assumed, for example, that knowledge of the fact that few people donate blood may increase the likelihood that a person will donate blood. On the other hand, it could equally be assumed that good knowledge of eligibility criteria may increase the likelihood that a person would not attempt to donate blood if he or she knows that an attempt to do so would be refused by the NZBS. Therefore, the fact that ineligible donors were not excluded from this sample may in part have contributed to this finding, if those respondents had a good knowledge of blood donation but were less likely to donate blood because they knew their offer to do so would be declined by the NZBS. To address this possibility, the sample selected for the larger study to follow included only respondents who were eligible to donate blood.

Two TPB indirect variables, *perceived behavioural control* and *subjective norm*, were significant ( $p < .10$ ) for predicting behavioural intention but not for predicting actual (self-reported) behaviour. Overall, the TPB indirect variables explained little of the variance for either the behavioural intention model or the actual behaviour model. Nevertheless, as the indirect (belief-based) measures are an integral component of the TPB, these variables were retained for the next stage of the study, using a larger sample to further test their explanatory power.

This study offers some support for the inclusion of *moral obligation* as an additional explanatory variable to extend the TPB for investigations of blood donation behaviour. Moral obligation was a better explanatory variable for predicting behavioural intention than either attitude or subjective norm. Whilst this finding was not repeated for predicting actual donation behaviour, the variable was included in the next research stage.

Overall, the TPB cognitive type variables predicted behavioural intention better than Labaw's behavioural type variables, but the former did not perform as well as predictors of actual (self-reported) behaviour. Labaw's approach was more successful than the theory of planned behaviour in terms of predicting actual behaviour, though in absolute terms neither approach was particularly successful. The largest Nagelkerke  $R^2$  value for all the models tested was .52, which indicates that none of the models explained a large amount of the variation in donation behaviour.

Nevertheless, the results of the pilot study were promising enough to support continued investigation of whether the predictive ability of Labaw's approach is better than the predictive ability of the theory of planned behaviour. It is particularly important to address this research question in terms of the prediction of actual behaviour rather than basing findings on the surrogate measure of behavioural intention, as so often occurs in consumer research. 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. But, the correlations between behavioural intention and actual behaviour were not strong in this study. Hence, the pilot study did not support the widely reported assumption that behavioural intention is the immediate precursor to actual behaviour. Interestingly, this result occurred in spite of the relatively short time interval between intention and behaviour. The closer the timeframe between the stated intention and the actual behaviour, the fewer factors would be expected to intervene to disrupt the intention-behaviour relationship.

Studies by Giles and Cairns (1995) and Armitage and Conner (2001a) reported far stronger correlations between behavioural intention and actual behaviour. However, it should be noted that Giles and Cairns did not provide details of this aspect of their

study, therefore a direct comparison of results is not possible. Moreover, Armitage and Conner used a proxy measure of actual behaviour, which they termed 'behavioural enactment'. Respondents were presented with five scenarios that were used to obtain an indication of blood donation behaviour as opposed to reporting their actual donation behaviour. Arguably, the variables Armitage and Conner used to measure behaviour were simply behavioural intentions and this explains the higher correlations they found between measures, in comparison to this study. Given that it is behaviour not intentions that most decision makers are ultimately interested in, this is an important consideration and justifies further investigation of the question of which approach best predicts actual behaviour.

Based on the outcomes and conclusions reported in this chapter, some changes were made to the questionnaire and to the survey methodology, prior to undertaking the second stage of this study. These changes and other details relating to the larger, main study are explained in the next chapter.

## **5. RESULTS AND DISCUSSION**

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### **5.1 INTRODUCTION**

This chapter reports the results of the research undertaken to address the objectives outlined in Chapter One. A comparison is made of the predictive ability of Ajzen's (1985) theory of planned behaviour and Labaw's (1980) approach to the same task, investigating both behavioural intention and actual (self-reported) behaviour as the dependent variables.

First, this chapter presents methodological details of the study, followed by the results. The results section begins with predictions of behavioural intention to donate blood, followed by predictions of actual (self-reported) blood donation behaviour. Finally, the main findings from this study are discussed and explanation is provided of how these findings fit within the context of previous studies.

### **5.2 SAMPLING AND SURVEY METHODOLOGY**

The questionnaire design and survey methodology relating to this study were comprehensively detailed in the previous chapter. Thus, only a brief overview of sampling and survey methodology is provided in this chapter. In addition, this section details modifications that were made to the survey design to address methodological issues that arose during the preliminary research.

#### **5.2.1 Sample Composition and Interview Timing**

The data for this main study were collected from 1262 students and staff, selected from four tertiary campuses in the lower North Island of New Zealand. The number of interviews undertaken at each venue corresponded with the number of days the New Zealand Blood Service (NZBS) was present, which in turn was determined by the size of the campus (see Table 5.1).

**Table 5.1 Interview Location and Timing**

<b>Interview Timing</b>	<b>Location</b>	<b>Sample Size</b>
April 2002	Massey University: Hokowhitu campus	25
May 2002	Massey University: Turitea campus	365
February 2003	UCOL: Palmerston North campus	145
March 2003	Victoria University: Wellington campus	425
April 2003	Massey University: Hokowhitu campus	59
May 2003	Massey University: Turitea campus	243
		<b>Total 1262</b>

Interviewing commenced in April 2002 at Massey University's Hokowhitu campus in Palmerston North. Further interviews were conducted in May 2002 at Massey University's Turitea campus in Palmerston North. Although the NZBS does schedule a campus visit during winter or early spring, interviewing during the later, colder months was not feasible as all interviewing took place outdoors. Interviewing resumed the following year, in February 2003, at the Universal College of Learning (UCOL) campus in Palmerston North, followed by interviewing at Victoria University's campus in Wellington. A second round of interviewing was then undertaken at Massey University's Hokowhitu and Turitea campuses. Although the potential existed for respondents to be interviewed twice at these two latter campuses, first in 2002 and again in 2003, there was no indication that this occurred. Interviewers were instructed to note whether respondents indicated that they had previously been interviewed and no such occurrences were observed.

As explained in the previous chapter, interviewing for the pilot study took place one week prior to the NZBS's visit. This timeframe mirrored the methodology reported in an earlier blood donation study by Giles and Cairns (1995). However, as discussed in

Chapter Three, a framework that is limited to short range predictions is, arguably, of marginal practical value (Ryan and Bonfield, 1980; Liska, 1984; Randall and Wolff, 1994). For this reason, the time interval between obtaining stated intentions and reported donation behaviour was extended from one week to four weeks. This allowed for the predictive ability of each approach to be tested using a timeframe with greater practical value for the purpose of decision-making.

### **5.2.2 Sample Selection**

In general, the same process was followed to select respondents for the major study as for the pilot study. That is, interviewing took place on the main concourse of each campus and respondents were randomly selected to take part in the survey. Potential respondents were approached by an interviewer, informed that the survey was about blood donation, and that the research was being carried out as part of a PhD study in the Department of Marketing. However, one change was introduced to the respondent selection process; a filtering question was included to exclude people who knew they were ineligible to donate blood. Thus, to the best of their knowledge, all respondents who took part in the major study could donate blood if they wanted to (see Appendix D for details of the questionnaire, and the respondent selection process).

The response rate for eligible respondents was approximately 95%. The high response rate achieved during both research stages of this study was most likely related to the inherent interest shown in the topic by respondents and because the respondents selected to take part were relaxing outdoors and had time available to participate in the survey.

### **5.2.3 Interviewer Recruitment and Training**

Interviewing was undertaken by the principal researcher and author of this thesis, with assistance from 25 interviewers, who were all tertiary students. Following the same process detailed in the previous chapter, prior to interviewing in the field the interviewers were trained to familiarise them with the questionnaire and with interviewing expectations. In addition, detailed written instructions were provided; these appear in Appendix C. Further assistance was provided by the principal

researcher, who was available throughout the interviewing process to assist the interviewers if required.

#### **5.2.4 Questionnaire**

##### *Delivery*

Two versions of the questionnaire were developed for the pilot study; one version included questions specific to respondents who had previously donated, or attempted to donate, blood, and one version included questions specific to respondents who had no prior donation experience. However, for the major survey, one questionnaire was presented to all respondents. The additional information obtained during the exploratory research process was not replicated for the major study.

Furthermore, whilst respondents were asked to self-complete the pilot questionnaire, only the theory of planned behaviour (TPB) section was self-completed for the final questionnaire. One reason for the change to face-to-face delivery was an attempt to increase the number of respondents willing to provide contact details; clearly, obtaining reported behaviour was a vital aspect of the study. Specifically, an attempt to increase the number of respondents willing to provide contact details was made by establishing rapport, using face-to-face contact between the respondents and the interviewers. Oppenheim (1992) states that it is part of an interviewer's skill to establish and sustain rapport, so that a respondent remains motivated and will complete the interview. Extended further, it was postulated that when contact details were requested by the interviewer, the rapport established during the interview would lead to a greater likelihood that details would be provided.

Using a face-to-face questionnaire delivery style did indeed lead to increased willingness by respondents to provide their contact details. Forty two percent of respondents who took part in the pilot study provided their contact details. Using face-to-face questionnaire delivery, this figure was increased to 87% of respondents interviewed for the major study. Moreover, a problem encountered during the pilot study was that some respondents' handwriting was barely legible, which led to complications when attempting to undertake follow-up contact, particularly when

deciphering email addresses. Thus, a further advantage of having interviewers rather than respondents record contact details was that legibility was improved, making follow-up contact easier.

One effect of this change in questionnaire delivery was an increase in the overall number of responses made to the knowledge questions. Predictably, respondents were more likely to attempt a question, or to offer additional responses, when prompted by an interviewer. However, this finding does not suggest that respondents responded to interviewer prompting with a greater demonstration of 'knowledge'. Rather, it was clear that in many cases respondents simply guessed at what they thought the answer to be when prompted, and when correct, increased their knowledge score for that question. As the knowledge score for each of the survey stages comprised seven questions coded from 0 to 2, any increase in responses to questions did not affect the overall knowledge score obtained. Rather, it resulted in different cut off points being used to establish whether a respondent's knowledge of some issues was 'low' through to 'good'.

The effect of questionnaire delivery mode on respondents' responses simply illustrates another issue associated with knowledge measurement, in addition to those discussed in Chapter Four. A related issue associated with obtaining knowledge when respondents are probed for further information is that the score obtained may reflect differences in interviewer skill or technique, rather than differences in respondents' knowledge. Although care was taken to ensure that the interviewers were carefully trained to probe respondents' knowledge, it is unclear what, if any, effect differences in interviewer skill had on the individual scores obtained for the knowledge questions.

### ***Further Modifications to the Pilot Questionnaire***

As a result of respondent feedback during the pilot study, some additional modifications were made to the final questionnaire. Most of the comments received from respondents who took part in the pilot study suggested that the survey was too long, particularly in regards to the number of indirect TPB questions asked. Moreover, many respondents made unfavourable comments about the nature of the questions (paired items) used to obtain indirect measures of attitude, subjective norm and perceived behavioural control. For example, one respondent wrote "there are too many scale questions which seem completely irrelevant. They all seem to be asking the same thing". Many similar

responses were offered, either in the section provided for written comments, or verbally to the interviewers. (For further examples of verbatim written comments made in response to the study see Appendix G.) In order to address concerns about respondent fatigue raised in the pilot study, the number of indirect TPB questions was reduced from 14 paired items (28 questions) to 10 paired items; a total of 20 questions (four indirect attitude measures, three indirect subjective norm measures and three indirect perceived behavioural control measures).

In a further attempt to address concerns about respondent fatigue, single item measures were used to obtain all the direct TPB measures, with the exception of direct attitude, which was measured using three items. One previous study reported using a single item direct attitude measure to predict intention to donate blood (see La Tour and Manrai, 1989), however, more than one item is generally used to cover those situations where people have mixed feelings about an action.

In regards to the remaining TPB direct measures (subjective norm, perceived behavioural control, moral obligation, past behaviour and behavioural intention), some researchers argue for the use of multiple response items to compensate for the limitations inherent in most individual items. However, Eagly and Chaiken (1993) state that surveys frequently involve the use of single evaluative measures and explain that the justification for this practice is primarily economic. For this survey, the use of multiple response items to compensate for effects in responses needed to be weighed against concerns about respondent fatigue. Moreover, there is no a priori way of determining the exact number of direct measures to include in a TPB questionnaire. This is demonstrated by a range of practices that have been applied in previous studies, from multiple response items (Armitage and Conner, 2001a), to a combination of single and multiple response items (Giles and Cairns, 1995), to the use of single response items (Harland, Staats and Wilke, 1999).

By way of further modification, the pilot study question that asked respondents if they were aware that the NZBS would be visiting the campus the following week was not included in the final questionnaire. Interviewing for the pilot study was undertaken one week prior to the mobile blood collection drive at a time when publicity material had been placed around the campus to announce the forthcoming visit. However, for the

major study, interviewing was undertaken four weeks before the NZBS's visit, prior to publicity material being made available. Given this situation, the question was no longer appropriate as many respondents would not have been aware of the forthcoming visit by the NZBS.

Modifications were also made to some Labaw questions. Respondents taking part in the pilot study were asked whether they had ever received donated blood or blood products, and, in a separate question, asked whether they knew someone else who had ever received donated blood or blood products. These two questions were combined for the major study. Also, a behaviour question that asked respondents about their monetary contributions to charity was not included in the major study due to a lack of variation in responses to the pilot study question.

Some modifications were also made to the knowledge questions asked in the final questionnaire. A question regarding how long the blood donation process takes was reworded to address uncertainty experienced by respondents during the pilot study. Furthermore, respondents were not asked to identify where on campus the NZBS would be located during their visit, nor were they asked how many times the NZBS visits the campus each year. During discussion with a NZBS representative it was ascertained that, although scheduled visits to some campuses were regular and used the same location site, this was not the case for all campus visits. Instead, an additional knowledge question, which asked respondents to provide as many uses as they could for donated blood, was added to the knowledge section. Thus, consistent with the pilot questionnaire, the final questionnaire included a total of seven knowledge questions with which to construct a total knowledge score.

Three Labaw type environment questions relating to *education status*, *employment status* and *number of children*, which were excluded from the preliminary analysis due to insufficient variation in the sample, were not included in the final questionnaire. Furthermore, ethnicity data was gathered for the major study, but was not included in the final analysis due to insufficient variation in the data.

### *Additional Variables*

The pilot questionnaire included an additional dependent variable, the Juster eleven-point probability scale, to measure each respondent's probability of donating blood when the NZBS mobile drive visited the campus. Although the Juster scale measure did not improve predictions of blood donation when compared with the other dependent variables, the question was retained for the major study. This was to allow further investigation of this variable using a larger sample. However, once again, this measure did not improve predictions of blood donation and, therefore, was not included in the results section that appears later in this chapter.

As the preliminary research provided some support for extending the TPB to include a measure of perceived moral obligation, this variable was retained for the major study. It has also been reported that a direct measure of past behaviour often improves predictions of both intentions and behaviour (Bagozzi and Kimmel, 1995; East, 1997; Ouellete and Wood, 1998; Sutton, 1998; Ajzen, 2001a). Moreover, in the context of blood donation, two studies found that a measure of past behaviour improved behavioural predictions over those provided by attitude and subjective norm (Bagozzi, 1981; Charng, Piliavin and Callero, 1988). Therefore, in a further attempt to improve the predictive ability of the TPB, a measure of past behaviour was included as an additional independent variable. Specifically, respondents were asked to rate their prior experience with blood donation using the following statement, which was grouped among the other TPB direct measures:

*Donating blood is something I have done:*

*often* \_\_7\_\_ | \_\_6\_\_ | \_\_5\_\_ | \_\_4\_\_ | \_\_3\_\_ | \_\_2\_\_ | \_\_1\_\_ *never*

### **5.2.5 Survey Sample**

Of the initial sample of 1262 respondents, 1102 (87%) provided their contact details to allow subsequent follow-up. At the conclusion of the NZBS mobile drive to each campus, attempts were made to contact each respondent who had provided his or her contact details. Respondents were contacted by email if details were provided, or else

by telephone. If email replies were not received within two weeks, a reminder email was sent, followed a week later by attempts to telephone the respondent. In some instances, it was necessary to make several attempts to contact respondents by telephone due to the number being engaged, or a respondent being unavailable at the time of contact. Telephone calls were spread throughout the day to increase the likelihood of contacting a respondent. Attempts were made to contact respondents for up to one month following the NZBS's visit. During this time, contact to establish reported donation behaviour was achieved with 91% of respondents who had provided their contact details. This left a sample size of 1008 to analyse respondents' behavioural intention and actual (self-reported) behaviour (see Table 5.2).

**Table 5.2 Respondents' Reported Donation Behaviour**

<b>Donation Behaviour</b>	<b>Frequency</b>	<b>Percent</b>
Did not donate blood	886	88.0
Donated blood	122	12.0
<b>Total</b>	<b>1008</b>	<b>100.0</b>

In total, 122 respondents (12%) reported that they had donated, or attempted to donate, blood. The gender distribution of respondents was 40% (400) male and 60% (608) female. The percentage of each gender who reported that they had donated blood was identical, with 12% of males and 12% of females stating that they had donated. The average age of respondents was 22 years, and the range was 16 to 59 (see Appendix F for age and gender distributions).

## **5.3 CODING AND ANALYSIS**

### **5.3.1 Coding the TPB Questions**

As three items were used to measure direct attitude, responses to each item were coded 1 to 7, and the scores were then summed and averaged to obtain a direct measure. Each of the remaining direct TPB variables was obtained using a single item measure, thus averaging of responses was not required.

To obtain indirect measures of the TPB variables, scale combinations were compared and the combinations that resulted in the highest correlations between the indirect variable (e.g., indirect attitude), and the corresponding direct variable (i.e., direct attitude) were selected for the final analysis. The best result was achieved by recoding all indirect attitude outcome evaluations to bipolar coding, recoding all normative belief strengths to bipolar coding, and, for all other measures, retaining unipolar coding (see Appendix E). This resulted in an identical recoding process of the indirect TPB variables as was undertaken for the pilot study.

### **5.3.2 Coding the Knowledge Questions**

To obtain a knowledge score for each respondent, a similar process was followed to that outlined in the previous chapter. That is, a knowledge score was obtained based on each respondent's response to seven knowledge questions: six open ended questions and one closed question. Scoring for each question was from 0 to 2. A total knowledge score was constructed by summing the scores for each of the seven knowledge questions. This resulted in a range of possible scores between zero and fourteen and, indeed, the range of actual knowledge scores obtained was from 0 to 14. Details of the questions that contributed to the overall knowledge score, and the coding criteria applied to each question, are provided in Appendix E.

## **5.4 RESULTS**

The predictive abilities of Ajzen's theory of planned behaviour and Labaw's approach were compared, investigating both behavioural intentions and actual (self-reported) donation behaviour as dependent variables. In this section, correlations between selected measures are examined; this is followed by discussion of the relative importance of selected variables. Discussion of behavioural intentions to donate blood, using linear regression, is presented first, followed by an investigation of actual (self-reported) donation behaviour, using logistic regression. As well as investigating each approach to predicting behaviour separately, consideration is given to creating a combined model, using statistically significant variables from each approach, in a further attempt to improve the prediction of blood donation behaviour.

### 5.4.1 Correlations

Correlations between the direct and indirect TPB variables, and the two dependent variables are displayed in Table 5.3.

**Table 5.3 Correlations Among Selected TPB Measures**

Variables	Intention	Direct Attitude	Indirect Attitude	Direct SN	Indirect SN	Direct PBC	Indirect PBC
Direct Attitude	.59**	-					
Indirect Attitude	.39**	.47**	-				
Direct SN	.36**	.34**	.30**	-			
Indirect SN	.31**	.26**	.32**	.51**	-		
Direct PBC	.66**	.55**	.41**	.29**	.21**	-	
Indirect PBC	.50**	.36**	.35**	.26**	.34**	.44**	-
Actual Behaviour	.32**	.23**	.08*	.11**	.09*	.29**	.15**

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

The strongest relationship with behavioural intention is with the perceived behavioural control variable ( $r = .66$ ). This finding suggests that the extent to which respondents feel they can control the factors that help or hinder their ability to donate blood is more closely associated with the formation of behavioural intentions than either their attitude or the normative influence of important others. The next strongest relationship with behavioural intention is with the direct attitude variable ( $r = .59$ ), followed by the indirect perceived behavioural control variable ( $r = .50$ ).

Correlations among the Labaw variables were also examined and highly correlated variables were removed from the final analysis. Three 'behaviour' variables were highly correlated, with values ranging from  $r = .74$  to  $r = .86$  ( $p < .01$ ): *donation experience* (categorisation of a respondent's level of blood donation experience from 'never donated' to 'regular donor'), *donation frequency* (how many times a respondent had donated) and *last donation* (the recency of a respondent's last donation). The variable *last donation* was retained and is included in the analysis reported in this section. The remaining Labaw variables were not highly correlated and were entered into the regression equation (see Table 5.4).

**Table 5.4 Correlations Among Selected Labaw-Type Measures**

Variables	Intention	Knowledge Score	Donation Experience	Donation Frequency	Last Donation	Ever Received Blood	Family Member Donor	Know Other Donors	Organ Donor	Age	Gender
Knowledge Score	.19**	-									
Donation Experience	.47**	.43**	-								
Donation Frequency	.44**	.42**	.86**	-							
Last Donation	.46**	.40**	.80**	.74**	-						
Ever Received Blood	-.02	.05	.00	.04	-.01	-					
Family Member Donor	.13**	.05	.12**	.14**	.12**	.06	-				
Know Other Donors	.09**	.06	.12**	.11**	.08*	.09**	.07*	-			
Organ Donor	.09**	.11**	.12**	.11**	.12**	-.02	.12**	.01	-		
Age	-.10**	.09**	.05	.15**	-.04	.16**	-.08*	-.10**	.07*	-	
Gender	.08*	.05	.02	.01	.00	.01	.04	.05	.03	.06*	-
Behaviour	.32**	.19**	.29**	.23**	.32**	.01	.05	.01	.04	-.08*	.00

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

### 5.4.2 Predicting Behavioural Intention

Table 5.5 presents the adjusted  $R^2$  and Beta values for behavioural intentions from linear regression analysis. Results for both the direct and the indirect measures of the TPB are detailed, and the table also includes the variables from Labaw's approach that are statistically significant ( $p < .05$ ).

**Table 5.5 Behavioural Intention**

Variables	TPB		Labaw
	Direct	Indirect	
Perceived Behavioural Control (PBC)	.471**	.388**	-
Attitude	.282**	.214**	-
Subjective Norm (SN)	.129**	.112**	-
Last Donation	-	-	.442**
Family Member Donor	-	-	.068*
Gender	-	-	.065*
Age	-	-	-.060*
<b>Adjusted <math>R^2</math></b>	<b>.52</b>	<b>.31</b>	<b>.23</b>

\*\*  $p < 0.01$

\*  $p < 0.05$

Interestingly, the variance explained by the direct TPB variables for both the pilot study and the major study was similar, as estimated by adjusted  $R^2 = .50$  for the pilot study compared with adjusted  $R^2 = .52$  for the major study<sup>13</sup>. Consistent with previous blood donation studies, *perceived behavioural control (PBC)* was a better explanatory variable than the other two TPB variables; *attitude* and *subjective norm*. Respondents' *attitude* toward the behaviour was a better predictor of willingness to donate blood than normative influences, which is also consistent with previous studies.

The adjusted  $R^2$  values for the indirect TPB variables were also similar between the two research stages of this study, with adjusted  $R^2 = .34$  reported for the pilot study

<sup>13</sup> Note: Results for the pilot study presented in the previous chapter report  $R^2$  values, rather than adjusted  $R^2$  values, in order to provide direct comparisons with an earlier blood donation study by Giles and Cairns (1995). However, adjusted  $R^2$  values are reported in this chapter.

compared with adjusted  $R^2 = .31$  for the major study. Once again, *perceived behavioural control* was a better explanatory variable than the other two indirect TPB variables, *attitude* and *subjective norm*. Overall, the indirect TPB variables provided less explanatory power than the direct TPB variables, which is consistent with previous blood donation research by Giles and Cairns (1995).

An additional variable, *moral obligation*, was then entered into the regression equation in an attempt to improve the predictive ability of the TPB model, over and above the standard direct TPB variables. Correlations with the other direct TPB variables were  $r = .47$  (with *attitude*),  $r = .41$  (with *SN*) and  $r = .39$  (with *PBC*). The addition of this variable to the model slightly increased the explained variance as estimated by adjusted  $R^2 = .55$  with the *moral obligation* variable included ( $p < .01$ ), compared with adjusted  $R^2 = .52$ , without this additional variable. The *perceived behavioural control* variable ( $\beta = .440$ ) and the *attitude* variable ( $\beta = .226$ ) were better explanatory variables than the *moral obligation* variable ( $\beta = .196$ ). However, the *moral obligation* variable was a better explanatory variable than the other standard TPB variable, *subjective norm* ( $\beta = .076$ ).

In a further attempt to improve the predictive ability of the TPB model, a *past behaviour* variable was entered into the regression equation, in addition to the three standard TPB variables. Correlations with the other direct TPB variables were  $r = .46$  (with *PBC*),  $r = .36$  (with *attitude*) and  $r = .17$  (with *SN*). The addition of this variable to the model slightly increased the explained variance, as estimated by adjusted  $R^2 = .54$  with *past behaviour* included ( $p < .01$ ), compared with adjusted  $R^2 = .52$ , without this additional variable. All three standard TPB variables offered better explanatory power than the *past behaviour* variable: *PBC* ( $\beta = .429$ ), *attitude* ( $\beta = .265$ ), *subjective norm* ( $\beta = .129$ ) compared with *past behaviour* ( $\beta = .116$ ).

When both the *moral obligation* variable and the *past behaviour* variable were entered into the model simultaneously with the standard TPB variables, the adjusted  $R^2$  value increased slightly to .56 with the two additional variables, compared with .52 with only the standard TPB variables. The variable *PBC* continued to provide the best explanatory power ( $\beta = .404$ ), followed by *attitude* ( $\beta = .212$ ), *moral obligation* ( $\beta = .191$ ), *past behaviour* ( $\beta = .101$ ) and *subjective norm* ( $\beta = .077$ ).

Comparison of the TPB direct and indirect variables and Labaw's (1980) approach found that both types of TPB variables were better predictors of behavioural intention than the Labaw variables, with adjusted  $R^2$  values of .52 (direct variables) and .31 (indirect variables) reported for the TPB models, compared with adjusted  $R^2 = .23$  for the Labaw approach. Interestingly, whilst there was little difference between the pilot study and the major study in regards to the explanatory power of the TPB variables, an improvement occurred for the Labaw variables: adjusted.  $R^2 = .23$  for the major study compared with adjusted.  $R^2 = .04$  for the preliminary study.

The Labaw variables, *last donation* (the recency of a respondent's last donation), *family member donor* (respondent has a family member who has donated blood), *gender* and *age* provided the best fit with the model, with the variable *last donation* providing the greatest explanatory power. Having a family member who has experience with the behaviour, and being a female donor, had a positive effect on respondents' intention to donate blood, albeit weaker in effect than the recency of a respondent's last donation. The remaining statistically significant variable, respondents' *age*, has a negative coefficient, which indicates that younger respondents are more likely to donate blood.

In a further attempt to examine the predictive ability of the variables included in this study, a model was formed by including the statistically significant variables from each of the two approaches ( $p = < 0.05$ ). This process resulted in nine variables being retained to form a combined model: five TPB variables based on an extended version of the model, and four Labaw type variables. Correlations among the variables used to form the combined model are shown in Table 5.6.

**Table 5.6 Behavioural Intention: Combined Model Correlations**

Variables	Intention	Attitude	Subjective Norm	PBC	Moral Obligation	Past Behaviour	Last Donation	Family Member Donor	Age
Attitude	.59**	-							
Subjective Norm	.36**	.34**	-						
PBC	.66**	.55**	.29**	-					
Moral Obligation	.50**	.47**	.41**	.39**	-				
Past Behaviour	.43**	.36**	.17**	.46**	.29**	-			
Last Donation	.46**	.41**	.22**	.46**	.31**	.66**	-		
Family Member Donor	.13**	.07*	.18**	.10**	.07*	.11**	.12**	-	
Age	-.10**	-.03	-.08**	-.05	-.04	.10**	-.04*	-.08*	-
Gender	.08*	.06	.00	.02	.10**	.03	.00	.04	.06*

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

The strongest relationships, of equal strength, are between *behavioural intention* and *perceived behavioural control*, and between *last donation* and *past behaviour* ( $r = .66$ ). The next strongest relationship is between *behavioural intention* and *attitude* ( $r = .59$ ). The results of the regression analysis are shown in Table 5.7.

**Table 5.7 Behavioural Intention: Combined Model**

Variables	Beta
Perceived Behavioural Control	.393***
Attitude	.202***
Moral Obligation	.177***
Last Donation	.084**
Subjective Norm	.069**
Past Behaviour	.065**
Gender	.050**
Age	-.050**
Family Member Donor	.026
<b>Adjusted R<sup>2</sup></b>	<b>.57</b>

\*\*\*  $p < 0.01$

\*\*  $p < 0.05$

The variables in the combined model accounted for 57% of the variance in behavioural intention. This model compares with 56% of variance explained with the extended TPB model, which included *moral obligation* and *past behaviour*; 52% of variance explained with the standard TPB model, and 23% of variance explained with the Labaw type variables. Overall, the TPB variables included in the combined model offered better explanatory power for predicting behavioural intention than the Labaw type variables. The best explanatory variable was *perceived behavioural control*, which alone accounted for 44% of the explained variance. Combined, *perceived behavioural control* and *moral obligation* explained 52% of the variance. A further 3% of the variance was explained with the addition of a third variable, *attitude*. Thus, three variables alone, *perceived behavioural control*, *moral obligation* and *attitude* accounted for 55% of the explained variance, with little additional explanatory power provided by the remaining variables in the combined model.

### 5.4.3 Predicting Behaviour

The results of the logistic regression analyses using actual (self-reported) behaviour as the dependent variable are shown in the following tables, beginning with the TPB direct measures, which are shown in Table 5.8.

**Table 5.8 Actual Behaviour - TPB Direct Variables**

Predictor Variable	Coef	SE Coef	P-value	Exp (B)
Perceived Behavioural Control	.503	.084	.000	1.653
Attitude	.359	.133	.007	1.432
Subjective norm	.026	.073	.721	1.027

\* Nagelkerke R<sup>2</sup> value is .19

\* Log-Likelihood = -315.27; G = 104.7, d.f. = 3, P-value = 0.000

The most important variable in predicting respondents' reported blood donation behaviour was *perceived behavioural control (PBC)*. The odds ratio indicates that for every one-unit increase in perceived control of the factors that help or hinder their ability to donate blood, respondents were 1.6 times more likely to report that they had donated blood. This finding is based on the assumption that the distance between points on the semantic differential scales used to measure this variable, and indeed all the TPB variables, is of equal distance<sup>12</sup>.

The next most important variable in predicting blood donation behaviour was *attitude*. For every one-unit increase in positive attitude toward the behaviour, those respondents were 1.4 times more likely to report that they had donated blood. The remaining variable in the equation, *subjective norm*, was not significant. Moreover, the exponentiated coefficient for this variable is close to 1, which indicates that a one-unit change in normative influence has little effect on respondents' willingness to donate

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<sup>12</sup> An important research issue involves the relationship between measurement scales and the concepts or constructs they are purported to assess. The scales used in this study are assumed to provide an accurate measure of the TPB constructs reported in this chapter. However, the reader is cautioned to note that the problems and issues associated with scale measurement were not addressed within the specific objectives of this study. For further discussion of scale measurement issues see, for instance, Schmidt, 1973; Churchill, 1979; Churchill and Peter, 1984; Breckler and Wiggins, 1989; Eagly and Chaiken, 1993; Rossiter, 2002; and Singh, 2004.

blood. The order of importance of direct TPB variables in predicting actual (self-reported) behaviour mirrors the order of importance found among variables when behavioural intention was used as the dependent variable.

To test an extended form of the TPB model, a *moral obligation* variable was entered into the equation. This variable was not significant at the 0.05 level. However, the direction of the coefficient was positive, indicating that a one-unit increase in an individual's perception of the moral correctness or incorrectness of performing the behaviour resulted in respondents being more likely to report that they had donated blood.

To further test an extended form of the TPB, a *past behaviour* variable (rating respondents' prior experience with blood donation from often donated to never donated) was included in the model, along with the three standard TPB variables. The *past behaviour* variable was significant ( $p < .05$ ) and the odds ratio indicates that for every one-unit increase in respondents' prior experience with blood donation, they were 12% more likely to report that they had donated blood. However, inclusion of this additional variable had little overall effect on the predictive ability of the model as indicated by the Nagelkerke  $R^2$  values of .20 with *past behaviour* included in the model, compared with .19 without this additional variable.

Next, the importance of the TPB indirect variables in explaining willingness to donate blood was considered. The results are reported in Table 5.9.

**Table 5.9 Actual Behaviour – TPB Indirect Variables**

Predictor Variable	Coef	SE Coef	P-value	Exp (B)
Indirect PBC	.014	.003	.000	1.014
Indirect Subjective Norm	.008	.008	.346	1.008
Indirect Attitude	.005	.008	.504	1.005

\* Nagelkerke  $R^2$  value is .05

\* Log-Likelihood = -350.21; G = 27.9, d.f. = 3, P-value = 0.000

Only the indirect perceived behavioural control variable was significant at the 0.05 level. Moreover, the results indicate that there was very little difference in importance among the variables. The exponentiated coefficients for all three variables are close to 1, which indicates that a one-unit change in measurement of these three independent variables has little effect on willingness to donate blood.

The analysis was repeated, this time entering the Labaw type variables into a logistic regression equation. The results are reported in Table 5.10.

**Table 5.10 Actual Behaviour – Labaw Variables**

Predictor Variable	Coef	SE Coef	P-value	Exp (B) <sup>13</sup>
Last Donation	.590	.080	.000	1.805
Knowledge Score	.105	.040	.009	1.110
Age	-.046	.019	.018	.955
Know Other Donors	-.263	.342	.442	.769
Organ Donor	-.161	.220	.464	.851
Received Blood	.145	.221	.511	1.156
Family Member Donor	.105	.233	.652	1.111
Gender	-.008	.215	.972	.992

\* Nagelkerke R<sup>2</sup> value is .19

\* Log-Likelihood = -314.63; G = 102.8, d.f. = 8, P-value = 0.000

The most important variable in predicting reported donation behaviour was *last donation* (the recency of a respondent's last donation). Respondents who had donated blood more recently were 1.8 times more likely to donate blood than those with less recent donation experience. *Knowledge score* (respondents' level of knowledge about blood donation) was the next most important variable. The odds ratio indicates that a one-unit increase in respondents' knowledge about blood donation, increases the

<sup>13</sup> Because the ranges and standard deviations of the three variables *last donation*, *knowledge score* and *age* differ, the percentage change in odds for a one standard deviation change was calculated, to make the coefficients more comparable (for each variable, the standard deviation was multiplied by the logistic regression coefficient, and then the exponential of the product was found). However, 'standardising' the variables made relatively little difference to the values of their exponentiated coefficients, therefore non-standardised values are reported in Table 5.10.

likelihood of donating blood by around 10%. The *age* variable was also significant, and the negative coefficient suggests that for each one-year increase in age, respondents were around 5% less likely to report that they had donated blood. The other variables in this equation (*know other donors* – respondent knows someone other than a family member who has ever donated blood; *organ donor* – respondent has ticked the box on his or her driver’s licence agreeing to potentially become an organ donor; *received blood* – the respondent or someone he or she knows has ever received blood; *family member donor* – a member of a respondent’s family has ever donated blood; and *gender*) are not significant at the 0.05 level.

In a further attempt to examine the predictive ability of the variables included in the analysis for this study, a model was created by combining the statistically significant variables from each of the two approaches presented in Tables 5.8 and 5.10 ( $p < 0.05$ ). Although statistically significant, the TPB indirect *perceived behavioural control* variable was not retained for further analysis as the effect of this variable on reported behaviour was minimal, as reported in Table 5.9. Thus, six variables were used to form a combined model: three theory of planned behaviour variables, and three Labaw type variables. Correlations among the variables used to form the combined model are shown in Table 5.11.

**Table 5.11 Actual Behaviour: Combined Model Correlations**

Variables	Behaviour	Attitude	PBC	Past Behaviour	Last Donation	Knowledge Score
Attitude	.23**	-				
PBC	.29**	.55**	-			
Past Behaviour	.24**	.36**	.46**	-		
Last Donation	.32**	.41**	.47	.66**	-	
Knowledge Score	.19**	.19**	.22**	.40**	.40	-
Age	-.08*	-.03	-.05	.10**	-.04**	.09**

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

The strongest relationship between variables is with *last donation* and *past behaviour* ( $r = .66$ ). The next strongest relationship between variables is with *attitude* and *perceived*

*behavioural control* ( $r = .55$ ). The results of the logistic regression analysis are shown in Table 5.12.

**Table 5.12 Actual Behaviour: Combined Model**

Predictor Variable	Coef	SE Coef	P-value	Exp (B) <sup>14</sup>
PBC	.376	.090	.000	1.457
Last Donation	.361	.099	.000	1.435
Age	-.047	.020	.019	0.954
Knowledge Score	.089	.041	.031	1.093
Attitude	.269	.139	.052	1.309
Past Behaviour	-.018	.064	.781	.982

\* Nagelkerke R<sup>2</sup> value is .25

\* Log-Likelihood = -293.85; G = 139.9, d.f. = 6, P-value = 0.000

The most important variables in determining respondents' actual (self-reported) behaviour were *perceived behavioural control* and *last donation*. The more respondents felt they could control the factors that help or hinder their ability to donate blood, and the more recently respondents had last donated blood, the more likely they were to donate again. Younger donors are also more likely to donate blood, than older donors. *Knowledge score* and *attitude* were also significant determinants of behaviour; the more respondents knew about blood donation, and the more positive their attitude towards it, the more likely they were to donate blood. The past behaviour variable was not significant at the 0.05 level.

<sup>14</sup> Because the ranges and standard deviations of the variables in Table 5.12 differ, the percentage change in odds for a one standard deviation change was calculated, to make the coefficients more comparable (for each variable, the standard deviation was multiplied by the logistic regression coefficient, and then the exponential of the product was found). However, 'standardising' the variables made relatively little difference to the values of their exponentiated coefficients, therefore non-standardised values are reported in Table 5.12.

## 5.5 DISCUSSION

### 5.5.1 Predictive Ability of the Models

In absolute terms, neither the TPB model nor Labaw's approach were good at predicting blood donation behaviour. Lack of variation in the sample may have contributed to this finding; only 12% of respondents reported that they had donated blood. Nevertheless, the purpose of the study was to compare the predictive ability of each approach to the same task and the study was successful in meeting this objective.

The study found the TPB variables explained approximately 50% of the variance in intention to donate blood. This finding is consistent with previous TPB studies as reviews suggest that the model can account for 40% to 50% of the variance in intentions (Godin and Kok, 1996; Sutton, 1998). Moreover, two recent blood donation studies by Giles and Cairns (1995) and Armitage and Conner (2001a), using similar methodology, report similar findings. By comparison, Labaw type variables explained only approximately 20% of the variance in behavioural intention to donate blood.

To consider whether an improvement in the prediction of behavioural intention could be achieved, the statistically significant variables ( $p = < .05$ ) from each approach were combined to form a new model (Table 5.7). The new model explained an additional 5% of the variance in behavioural intention. Overall, the best predictor variables in the combined model were the TPB variables, with little extra variance explained by the Labaw type variables. Hence, the results suggest that Labaw's approach is not a good predictor of behavioural intentions. However, although predictions of behavioural intention to donate blood were better using the TPB model, it is important to note that nearly half of the variance remained unexplained.

Examination of the ability of models to predict behavioural intention is an interesting methodological consideration, however, prediction of actual behaviour is of most interest. The results of this study determined that predictions of actual (self-reported) blood donation behaviour were identical for each approach, as indicated by pseudo  $R^2$  values of .19. Although the Nagelkerke  $R^2$  value does not represent explained variance

in the same way as  $R^2$  in least squares regression, it does provide a model fit measure that is analogous to the  $R^2$  value calculated from least squares regression (Pampel, 2000). Thus, the relatively low pseudo  $R^2$  values found in this study suggest that neither model provided good predictions of blood donation behaviour.

No similar studies using Labaw's approach were available to compare the results of this study. There has also been no comparable TPB study in which behaviour was used as the dependent variable. A measure of respondents' actual (self-reported) blood donation behaviour was obtained by Giles, McClenahan, Cairns and Mallet (2004), during a recent study using an extended version of the TPB. Approximately one week prior to a university campus visit by the Blood Transfusion Service (BTS), Giles *et al.* obtained intentions to donate blood from a sample of 100 students. Follow up contact the week following the BTS visit was achieved with 52 respondents, of whom six reported that they had donated blood. However, no attempt was made by Giles *et al.* to compare actual and predicted behaviour (because their sample of donors was so small).

Another blood donation study by Armitage and Conner (2001a), also using an extended version of the TPB, reported an  $R^2$  value of .54 for predictions of blood donation behaviour, which is higher than the .19 value obtained for this study. However, their study, based on a sample size of 89, used a pseudo measure of behaviour. Armitage and Conner obtained behavioural intentions and two weeks later respondents were contacted and presented with a scenario relating to an opportunity to donate blood, which was designed to provide an indication of 'behavioural enactment'. However, it cannot be assumed that respondents' responses to a blood donation scenario would necessarily mirror their actual blood donation behaviour.

For this study, a further attempt was made to improve the prediction of actual (self-reported) behaviour by combining the statistically significant variables ( $p = < .05$ ) from each approach (Table 5.12). This resulted in an increase in the Nagelkerke  $R^2$  value from .19 to .25; however, most of the variance in behaviour remained unexplained. This finding, although somewhat disappointing, reflects the difficulty of predicting blood donation behaviour.

As stated in Chapter Two, a comprehensive review of the blood donation literature by Piliavin (1990) concluded that there is no reliable way to predict who is most likely to donate blood. Neither this study, nor other recent blood donation studies have solved the problem identified by Piliavin. Clearly, more work needs to be done in the area of blood donation research to improve behavioural predictions. Nevertheless, other factors emerged from this study that are beneficial to expanding the existing body of knowledge about predicting human behaviour in general, and blood donation behaviour in particular, and these are discussed in the sections that follow.

### **5.5.2 Application of the Models**

To reiterate, the broad purpose of this study was to consider whether attitude questions should be replaced with questions that can be ‘truthfully’ answered when designing studies to predict behaviour. Labaw’s approach to predicting behaviour involves asking questions that have a verifiable answer. Her approach is in contrast to Ajzen’s TPB, which uses questions based on respondents’ internal thoughts and feelings about an action.

Although the predictive ability of the models compared in this study was equivalent in terms of the variance explained, an important finding was that the ease of application of the questionnaire approaches in the field was different. No discernable difficulties occurred with the application of Labaw type questions in the field, but limitations were identified with application of the TPB section of the questionnaire. This finding is especially pertinent given that Ajzen’s TPB is widely regarded as the most sophisticated technique available for behavioural predictions.

It was noted in Chapter Four that, as a result of respondent dissatisfaction with aspects of the TPB section of the pilot questionnaire, modifications were made to the final questionnaire. This was necessary to ease respondent fatigue and promote respondents’ cooperation to complete the questionnaire. In particular, respondents commented about dissatisfaction with three aspects of the questionnaire design: a perceived moralistic tone of some questions, perceived repetition of the indirect belief-based measures, and difficulty with understanding the meaning of some questions.

Considering first an objection expressed by some respondents about an overly moralistic tone to some TPB questions, Marks (1996) also criticises the wording sometimes used with standard psychological-based questionnaire design. He describes questions as sometimes inappropriate to the point of offensiveness, which can cause distress resulting from “questionnaire-bashing”. Marks suggests a need to develop more user-friendly measures, which are brief, non-invasive and non-threatening. Clearly, it was not the intent of this survey to make a moral judgement about a respondent’s blood donor status, yet some respondents considered that this was what some questions inferred. This perception was especially evident amongst non-donors.

As a result of the difficulties encountered with interviewing during the preliminary research, the following specific instruction was provided to the interviewers assisting with the major study, to help ensure that the questionnaires were completed (see Appendix C for full details of interviewers’ instructions).

*This part of the survey includes a series of questions that have been written a particular way for the purpose of the survey, and are to be self-completed by the respondent. Please remain with the respondent during this time. If respondents attempt to skip some questions because they feel these questions seem repetitive, or query the perceived awkwardness of some questions, it is vital that you encourage them to answer all the questions as presented. Explain that each question is important to the outcome of the survey and that their cooperation with answering all questions would be most appreciated.*

Respondents experienced an apparent difficulty in differentiating between the two components of the indirect belief-based measures, say, the belief outcome (e.g., I want to do what my friends or colleagues think I should do: likely/unlikely) and the corresponding belief strength (i.e., My friends or colleagues think I should donate blood when the NZBS comes to the campus next month: likely/unlikely). Due to the corresponding nature of the question wording used for the paired items, many respondents perceived that they were being asked the same question twice. Ajzen suggests separating the two parts of the question and presenting them in the order indicated above (the belief outcome followed by the belief strength), however, this appeared to add to respondent confusion. Ajzen provides sound methodological reasons

for the wording and question order of paired items, yet application in the field does not appear to complement the rationale for the methodology.

Knight (1983) too reported difficulties with respondent fatigue when presenting a blood donation questionnaire in several parts. Initially he had intended to use three parts to a question, but proceeded with two parts after pilot testing found respondent fatigue to be a problem, even with only two sections to each question. Knight states,

*It was impossible to avoid repetition which led to irritation and boredom on the part of some respondents. In fact, two questions were dropped mid-way through the survey and two others were deliberately omitted for certain respondents to ensure that the most important questions were answered (p. 68).*

Oppenheim (1992) explains a difficulty with attitudinal based research is that attitudinal questions are more sensitive than factual questions to changes in wording, context, emphasis and so on, therefore it becomes almost impossible to assess reliability by asking the same question in another form. Hence, typically numerous questions are asked and then it is necessary to ask the same question in similar forms. Of course, the rationale for this approach is not obvious to the respondent.

Despite a reduction in the number of paired items used in the final questionnaire, many of the same comments and criticisms received from respondents during the preliminary research stage were repeated during the main survey stage. (A summary of combined verbatim responses to the two stages of this study is presented in Appendix G.) One verbatim comment, which typified respondent feeling toward the questionnaire stated,

*The survey questioning is not done well. Lots of wording is unspecific or confusing. It is also too long and many questions are repetitive.*

On average, the actual time taken by respondents to complete the questionnaire was 10 to 15 minutes, yet clearly, the perceived time to complete the questionnaire was longer. This appeared to be due to the repetitive nature of the questions and the difficulty some respondents experienced with deciphering what exactly the question asked, which slowed their progress in completing the questionnaire. Numerous requests were made

for assistance with understanding what certain TPB questions asked, though no such difficulty with question understanding occurred with the Labaw type questions.

Labaw (1980) defines one example of a bad question as one that is incomprehensible to the respondent because the wording, the concepts, or both cannot be understood. In her view, bad questions are any questions that obscure, prohibit, or distort the fundamental communication from respondent to researcher. She states,

*“A researcher may think he has written an excellent question because it accurately conveys his point of view or interest to the respondent, but if the respondent cannot answer it meaningfully, it still remains a bad question” (p. 6).*

Instead, Labaw posits that a questionnaire should be designed to prevent it becoming simply an instrument of the writer’s perceptions, values, and language, which is then inflicted upon the respondent. Arguably, many questions presented in the theory of planned behaviour would be labelled ‘bad’ questions according to Labaw’s definition.

It is also worth noting that Labaw was a market research practitioner, working largely in the area of public opinion polling. Thus, her questionnaires were designed for use in the public arena. By contrast, based on observation of published studies, TPB questionnaires are used largely in academic research, often using a student population, sometimes in a classroom setting, and sometimes with credit given towards course work as an incentive for participation. Liska (1984) too noted that Fishbein and Ajzen models are more strongly supported in laboratory than field studies. It is postulated by the principal researcher and author of this thesis, based on heavy personal involvement in all aspects of the data collection, that the TPB questionnaire design would be more difficult to implement using a general population sample, than Labaw’s approach to questionnaire design.

In absolute terms there was no difference in the predictive ability of the two approaches, however, Labaw’s approach was superior to the TPB in terms of ease of application in the field. The TPB, although well considered from a methodological perspective, is not well received by respondents and is therefore flawed in this aspect of its design. This

provides a strong argument for advocating use of Labaw's approach to questionnaire design for predicting behaviour, in preference to using Ajzen's TPB.

### 5.5.3 The Intention-Behaviour Relationship

As explained earlier, a strong assumption of behaviour research is that intention is the immediate antecedent to actual behaviour. Intentions are assumed to capture the motivational factors that have an impact on behaviour. Assuming the behaviour is under volitional control, people can be expected to do what they intend to do. Expressions of behavioural intention should thus permit a highly accurate prediction of corresponding volitional action (Ajzen, 1988).

Intentions are often used as a surrogate measure of actual behaviour, and research in the area of blood donation is no exception (Sarason, Sarason, Pierce, Shearin and Sayers 1991; Giles and Cairns, 1995; Reid and Wood, 2002). Yet, Barkworth, Hibbert, Horne and Tagg (2002) note a criticism of previous blood donation research is researchers' reliance on measures of intention to predict behaviour, as very few studies have used actual donation as an outcome measure. They caution the problem with such studies is that although intention is correlated with behaviour it is not the same as actual donation behaviour. Tuck (1976) too cautioned researchers to later check whether the measures of intention obtained are in fact accurately predictive of subsequent behaviour. Hence, an objective of this study was to investigate the correspondence between behavioural intention and actual (self-reported) behaviour.

Two meta-analyses (Sheppard, Hartwick, and Warshaw, 1988; Randall and Wolff, 1994), involving samples of 87 and 98 studies, respectively found average correlations of .53 and .45 between intention and action across a wide range of behaviours. Yet, an interesting finding of this study is that for both research stages, far weaker correlations between intention and behaviour were found of  $r = .29$  for the pilot study (not significant), and  $r = .32$  for the major study (significant at the 0.01 level). Moreover, it would be assumed that the correlation between intention and behaviour should have been stronger for the pilot study where the timeframe between measures was one week, compared with four weeks for the major study. That is, it is assumed that the closer the

timeframe between measurements, the less time there is for events to intervene between stated measurements of the intention and observations of behaviour. Indeed, Ferguson (1996) reports that the predictive power of behavioural intentions reduced as the time interval between measurement and the recording of actual blood donor behaviour increased.

Perhaps not surprisingly, considering the weak correlation found between behavioural intention and actual (self-reported) behaviour, different explanatory power was found among the independent variables used to predict behavioural intention and behaviour. This finding supports Callero and Piliavin's (1983; cited in Breckler, 1994) suggestion that intentions and actions regarding blood donation are predicted by different sets of variables. Yet, the logic of this suggestion is not obvious, since if behavioural intention were truly the immediate precursor to actual behaviour, it would be expected that the variables that best predict intention would predict actual behaviour with equal strength. Although the variables *gender*, *family member donor* (respondent has a family member who has donated blood), *moral obligation* and *subjective norm* were among the best variables for predicting behavioural intention, these variables were not among the best variables for predicting actual (self-reported) behaviour. Moreover, although *knowledge score* (respondents' level of knowledge about blood donation) was not a good predictor of behavioural intention, it was among the best predictors of actual behaviour.

The findings of this study suggest that the basic premise upon which many research findings are based is flawed. It cannot be assumed that intentions always provide an accurate prediction of the corresponding behaviour. Therefore, it is important for researchers to demonstrate a greater willingness to question the intention-behaviour assumption than has been evident in published findings to date.

#### **5.5.4 The Relative Importance of Selected Variables**

Sutton (1998) argues that an explanatory model should have wider implications and greater strategic value than a purely predictive model. In addition to helping predict behaviour, a model can also help researchers understand the factors that lead some people but not others to behave in a predicted way. Similarly, Fishbein and Ajzen

(1975) posit that to improve our understanding of human behaviour, it is necessary to identify the determinants of the action. Therefore, in addition to considering the predictive ability of the two approaches tested in absolute terms, consideration was also given to the relative importance of the variables used in this study. An insight into the relative explanatory power of selected variables may have important managerial implications for the blood collection agencies. First, the relative importance of the TPB variables is considered, followed by discussion of the contribution of the Labaw type variables to this study.

### ***The TPB Variables***

This study found that the most important variable in the TPB model was *perceived behavioural control* (PBC). Confusion exists amongst researchers about the exact meaning of perceived behavioural control, and in particular, how it differs from the concept of self-efficacy (this distinction is discussed in more detail in the next section). For this study, Ajzen's (2002) definition was used in which perceived behavioural control refers to respondents' perceived control over performance of a behaviour. Thus, the findings suggest that an important determinant in the decision to donate blood is respondents' perceived control over the factors that help or hinder their ability to donate blood, if they wish to do so.

The PBC variable is viewed in two distinct ways within the TPB. One view is that the effect of perceived behavioural control is completely mediated by intention, and that intention in turn is the immediate antecedent of behaviour. Thus, given a sufficient degree of actual control over a behaviour, people are expected to carry out their intentions when the opportunity arises (Ajzen, 2002). A second view of the theory of planned behaviour is the possibility that a direct link exists between perceived behavioural control and behaviour, which applies when people have limited control over their actions (East, 1997). However, as stated by Ajzen and Driver (1992), whether or not a measure of perceived behavioural control can substitute for a measure of actual control depends, of course, on the accuracy of respondents' perceptions. Madden, Ellen and Ajzen (1992) report incidences in which predictions of behaviour were improved by the inclusion of PBC, from predictions using intention alone. For this reason, Ajzen

(2002) suggests to potentially improve predictions of behaviour it is useful to consider perceived behavioural control in addition to intention.

Although not a specific objective of this study, further regression analysis was performed to examine whether predictions of blood donation could be improved by investigating the explanatory power of PBC in isolation from intention. The first step involved the regression of behaviour on behavioural intention, and in the second step, PBC was added to the equation. The Nagelkerke  $R^2$  value increased from .24 with intention alone to .26 with the inclusion of the PBC variable. Thus, the effect of perceived behavioural control was almost completely mediated by intention. Performing the same analysis, Giles and Cairns (1995) found that blood donation predictions were not improved at all by the inclusion of PBC, from predictions using intention alone. Combined, these findings suggest that little improvement in predictions of blood donation behaviour is achieved by examining the relative contribution of these variables separately. That is, for this behaviour, it appears that people can accurately represent their actual control over the factors that help or hinder their ability to donate blood.

A second variable central to the TPB model, *attitude toward the behaviour (attitude)*, also contributed towards predictions of actual (self-reported) behaviour. Previous blood donation studies have described *attitude* as a strong predictor of intention to donate blood (Bagozzi, 1981; Charng, Piliavin and Callero, 1988; Breckler, 1994; Giles and Cairns, 1995). However, although a positive attitude toward the behaviour is associated with a greater likelihood of donating blood, it is clear from the findings of this study that having a positive attitude toward the behaviour alone is not sufficient to motivate action. That is, inclusion of the *attitude* variable in the TPB model did not improve its overall predictive ability beyond the Nagelkerke  $R^2$  value of .19. Consistent with this finding, Sarason, Sarason, Pierce, Shearin and Sayers (1991) found that promotional interventions aimed at heightening motivation to donate were successful in changing attitudes toward donation in a positive direction, but that only a modest portion (14%) of the variation in the actual donation rate was associated with attitudes.

Reviews and meta-analyses have shown the remaining variable in the TPB model, *subjective norm*, to be the weakest predictor of intention (Ajzen, 1991; Godin and Kok,

1996; Sheppard *et al.*, 1988; van den Putte, 1991; cited in Conner and Armitage, 1998). Moreover, in the context of blood donation, previous studies suggest that subjective norm is not a good predictor of future behaviour (Giles and Cairns, 1995; Ferguson, 1996; Armitage and Conner, 2001a). The findings of this study also indicate that subjective norm is not an important predictor of blood donation behaviour (see Table 5.8). Indeed, only one study in the context of blood donation has found evidence to support inclusion of the normative component in predictive models (Zuckerman and Reis, 1978), and a small effect of normative influence on behaviour was reported by LaTour and Manrai (1989). Thus, while social norms are thought to have a positive influence on some types of altruistic behaviours (Radley and Kennedy, 1995), it would appear that blood donors are not strongly influenced by perceived social pressure to act.

An interesting question is whether the effect of attitudes and normative factors on behaviour varies according to an individual's prior experience with the action. Some studies have found that when people lack direct personal experience with an action, they will rely more on the influence of others. For example, Callero and Piliavin (1983; cited in Breckler, 1994) report that first time blood donors are more influenced by external social pressures, than are experienced donors. Attitudes too are thought to serve as more robust predictors when they are formed via direct experience with the behaviour (Fazio and Zanna, 1981; Allen, Machleit and Kleine, 1992). Yet, not all studies support this suggestion. For example, a recent blood donation study by Farley and Stasson (2003) did not support the hypothesis that direct experience increases attitude-behaviour consistency, at least in the context of predicting behavioural intention.

To consider the extent to which prior behaviour influences *attitude* and *subjective norm*, the sample for this study was divided into sub-samples; one sample comprised of respondents who had *never* donated blood, or attempted to donate blood ( $n = 447$ ) and the other sub-sample comprised of those who had *ever* donated blood, or attempted to donate blood ( $n = 561$ ). The odds ratios from logistic regression analyses were then compared between sub-samples.

For the *attitude* variable, the exponentiated coefficient was 1.8 for both donors ( $p = < .01$ ) and non-donors ( $p = < .05$ ). This finding indicates that attitude toward blood

donation behaviour does not vary according to an individual's prior experience with the action. Next, the effect of prior experience on normative influences was considered. For donors the exponentiated coefficient of *subjective norm* was close to 1 (not significant), which indicates that a one-unit change in normative influence has little effect on respondents' donation behaviour. For non-donors the odds ratio ( $p = < .10$ ) indicated that for every one-unit increase in normative influence, respondents were 1.3 times more likely to report that they had donated blood. Thus, the finding suggests that non-donors are more influenced by normative factors than donors, though overall, normative factors are less important in the donation decision than attitude toward the behaviour. Interestingly, when *perceived behavioural control* was entered into the logistic regression equation, this variable was more important than either *attitude* or *subjective norm*, and its importance did not vary according to respondents' prior blood donation experience.

### ***Extending the TPB***

Extending the TPB to include additional variables beyond the three standard variables was not a specific objective of this study. However, given the suggestion that inclusion of *moral obligation* and *past behaviour* (a measure of a respondent's prior experience with the behaviour), has improved the predictive ability of the TPB, these two variables were included. The results suggest that the moral obligation variable explained an additional 3% of the variance in intentions to donate blood over and above the standard TPB variables. This finding is consistent with Conner and Armitage's (1998) meta-analysis of TPB studies, which found that the addition of the moral obligation variable contributed 4% of unique variance (on average) to the prediction of behavioural intention, over and above the standard variables. For this study, the moral obligation variable was a better predictor of behavioural intention than subjective norm, which is consistent with findings by Armitage and Conner (2001a). However, for predicting actual behaviour the moral obligation variable was not significant, although the coefficient was in the expected direction.

As reported earlier, the *past behaviour* variable made a modest improvement to the prediction of behavioural intention, explaining an additional 2% of the variance. However, the addition of this variable to the TPB model made negligible difference to

its ability to predict actual (self-reported) behaviour (as evidenced by Nagelkerke  $R^2$  values of .20 with *past behaviour* included in the model, compared with .19 without this additional variable).

Ajzen (1991) argues that the perceived behavioural control variable reflects past experience and that there is often an overlap between these two variables. Thus, as noted by East (1997), when a PBC variable and a past behaviour variable are entered simultaneously into a predictive model, the PBC variable reduces the residual explanation derived from past experience. To consider this point further, additional logistic regression analysis was performed, and *past behaviour* was entered into the TPB model in place of *PBC*. This procedure led to a reduction in the predictive ability of the TPB model as evidenced by Nagelkerke  $R^2$  values of .19 with *PBC* included in the model, compared with .15 when *PBC* was replaced with the *past behaviour* variable. Moreover, when the statistically significant variables from the TPB and Labaw's approach were combined into a new model which included *past behaviour*, the past behaviour variable was not significant and the coefficient was not in the expected direction (Table 5.12).

Thus, the results of this study do not support extending the TPB to include *moral obligation* or *past behaviour*. It is concluded that these variables provide modest support for predicting behavioural intentions, but for the prediction of actual behaviour, little practical gain is to be found in their inclusion. Overall, the findings support those of Beck and Ajzen (1991), who also investigated extending the TPB to include direct measures of both *moral obligation* and *past behaviour*. Beck and Ajzen concluded that perceived moral obligation seems to contribute to the formation of intentions, but from a practical point of view, including a measure of this variable in the prediction equation is of only modest utility. Similarly, when they added past behaviour to the model, in addition to PBC, subjective norm, attitude, and moral obligation, they found it made only a modest improvement to the predictive strength.

Recently, it has been suggested that the predictive ability of the TPB could be further improved by conceptualising a distinction between the concepts of *perceived behavioural control* and *self-efficacy* (Rhodes and Courneya, 2003). Of particular interest, it has been suggested that predictions of blood donation behaviour could be

improved by observing this distinction (Armitage and Conner, 2001a; Giles, *et al.*, 2004; Lemmens, Abraham, Hoekstra, Ruiter, De Kort, Brug and Schaalma, 2005).

The role of perceived behavioural control in determining behaviour is credited to earlier research by Bandura (1977), who used the term 'self-efficacy' to mean much the same as 'perceived behavioural control' (East, 1997). Armitage and Conner (2001a) describe self-efficacy as a measure of perceived internal control of one's own personal resources (confidence or personal ability to act). By contrast, they describe perceived behavioural control as a measure of the extent to which a person's decision to act is influenced by factors outside of his or her control (e.g., having the time to act, having the opportunity to act). Ajzen (2002) concedes that the concepts of perceived behavioural control and self-efficacy are quite similar and that both are concerned with perceived ability to perform a behaviour, hence some confusion arises from researchers' interpretation of the variable.

A recent review of 11 empirical studies that have examined self-efficacy and perceived controllability suggests that these two concepts can be reliably distinguished across a broad range of behaviours. However, an examination of the questions that have been used to measure each concept highlights the similarity in definition of these terms. For example, to measure self-efficacy, a question used by Lemmens *et al.* (2005) was: *If I wanted to I could easily donate blood: completely agree-completely disagree*. Lemmens *et al.*'s question is very similar to the direct PBC question used in this study: *For me, donating blood when the NZBS comes to the campus next month is: easy-difficult*. Similarly, Giles *et al.*, (2004) used the following question to measure self-efficacy: *If it were entirely up to me, I am confident that I would be able to give blood at the University this week: strongly agree-strongly disagree*, and to measure PBC they used the following question: *It is mostly up to me whether or not I give blood at the University this week: strongly agree-strongly disagree*. Arguably, respondents would interpret the questions in much the same way, leading to little or no difference in response to the two measures. Any actual difference in response may be attributable to the question wording adopted for a particular study rather than due to differences in the relative explanatory power of the concepts *per se*. For additional illustrative comparisons of questions used to denote self-efficacy and perceived behavioural control see Ajzen (2002).

Clearly, before extending the TPB model to include the self-efficacy variable, empirical evidence is needed to support the suggestion that *PBC* and *self-efficacy* do influence behaviour in different ways. In particular, future research is needed to address issues of definition and similarity in question wording when applying these concepts. This is especially important given the concerns already raised in this study regarding the TPB questionnaire design and the similarity in meaning respondents noted among some questions.

### ***Indirect (Belief-Based) TPB Variables***

A further finding of this study is that the indirect (belief-based) measures of the TPB are not important in the prediction of blood donation behaviour. As stated by Ajzen and Driver (1991), at its most basic level of explanation, the TPB postulates that performance or non-performance of a behaviour is a function of salient information, or beliefs, relevant to the behaviour. The reason for examining the belief-based measures separately from the global (direct) measures is to enable the researcher to gain a better understanding of the process by which the global variables are formed. This understanding may benefit decision-making, for example, guiding the formation of promotional strategies. In theory, therefore, the direct and indirect measures of a given construct within the theory of planned behaviour must be closely correlated. Empirical results, however, indicate that this is not always the case, with correlations typically 0.4 to 0.6 (East, 1997).

One reason suggested for weak correlations found between direct and indirect measures of the TPB relates to the scaling method used. At least two scaling methods have been recommended for measurement of each of the belief-based measures of the theory of planned behaviour: unipolar scoring and bipolar scoring. As Gagne and Godin (2000) point out, the same authors have provided reasons over the years as to why each alternative may be used (Fishbein and Ajzen, 1975, and Ajzen, 1991, refer to unipolar scoring and Ajzen and Fishbein, 1980, suggest bipolar scaling). As explained previously, for this study an attempt was made to improve predictions of the indirect measures by looking for the scaling method that resulted in the strongest correlations between direct and indirect measures, as suggested by Ajzen (2001a) and East (2000).

Although this process did improve the correlations between direct and indirect measures, the variables remained unimportant for predicting blood donation behaviour.

Another reason offered for the modest correlation often found between indirect and direct variables is that the use of a set of modal salient beliefs presupposes homogeneity of beliefs across a given population by assuming that each respondent possesses the same set of beliefs. As explained in Chapter Four, an elicitation process is undertaken to ascertain respondent beliefs about the behaviour in question, and the most frequently mentioned responses are used to generate the belief-based questions. As such, individual respondents are likely to have fewer salient beliefs than those common to the population. It has been found that indirect measures are better predictors of intentions if calculated using only personally salient beliefs, obtained from each respondent individually (East, 1997). Of course, in practice the extra time and cost necessary to obtain individual salient beliefs would be prohibitive in most cases. Yet, poor correlations may occur between direct and indirect measures when respondents are asked to respond to belief items, which to them are not personally salient. For example, donors' beliefs are perhaps different to non-donors' beliefs. This led Towriss (1984) to state that the use of the common belief set places limitations on models that use this research methodology.

Following weak correlations between direct and indirect measures, East (1992) concluded that, although improvements in measurement technique can improve correlations, the possibility remains that the direct measures of attitude toward the behaviour, subjective norm and perceived behavioural control have relatively little in common with those measured by the indirect measures. Certainly, on the basis of the findings of this study, it cannot be assumed that the direct and indirect measures of the TPB are synonymous. Moreover, incorporating the indirect measures of the TPB into the questionnaire increases the length of the questionnaire, which adds to the survey costs, and increases the risk of respondent fatigue. Given the surveying difficulties encountered with the indirect measures in this study, and little evidence to suggest that indirect measures improve the predictive ability of the TPB, it is suggested that these measures be omitted from surveys.

### *The Labaw Type Variables*

The most important Labaw type variable to emerge from this study was *last donation* (Table 5.10). Other studies have also found that both recency of last donation and frequency of donations are important predictors of blood donation behaviour (see, for instance, Breckler, 1994; Whyte, 1999; Flegel, Besenfelder and Wagner, 2000; Ferguson and Bibby, 2002).

These findings are perhaps not surprising as it is recognised that most of the blood given is donated by a small minority of regular, repeat donors (Piliavin, 1990; Gillespie and Hillyer, 2002). Nevertheless, these findings support Labaw's (1980) contention that past behaviour is a useful predictor of future behaviour. Three questions were used to measure respondents' previous donation experience: *last donation* (the recency of a respondent's last donation), *donor category* (the extent of a respondent's experience with blood donation, from never donated to very experienced), and *donation frequency* (how many times a respondent has donated). However, as these variables were highly correlated, only *last donation* was included in the regression analyses reported in this chapter.

Though *last donation* is clearly an important explanatory variable of blood donation behaviour, it should be noted that relatively little of the variance in behaviour was explained using Labaw's approach (as evidenced by the Nagelkerke  $R^2$  value of .19). However, the extent to which measures of prior experience contribute to the predictive ability of a model does of course depend on the variation in the sample. It is important to remember that fewer than 5% of New Zealand's population are current blood donors (with similar figures reported in other countries worldwide). Many people have no prior blood donation experience, and first time donors are less likely to return for subsequent donations than repeat donors (Flegel *et al.*, 2000). For this study, 44% of respondents had no prior experience with the behaviour, and a further 15% had donated only once. Thus, predictions of blood donation based on respondents' experience with the behaviour are likely to contribute little to the overall utility of the model if the sample includes a high proportion of respondents with little or no donation experience.

Another important explanatory variable in this study was respondents' *age*. The findings indicate that younger donors are more likely to donate blood than older donors. It should be noted, however, that the average age of respondents was 22 years, with 50% of the sample aged 20 years or younger, and 80% aged 25 years or younger. Therefore, this finding is not comparable with results based on a donor sample drawn from the general population. Nevertheless, this finding is consistent with a review of earlier studies by Ferguson (1996), which indicated that younger donors are more likely to donate blood, with subsequent donations decreasing for various reasons as people get older.

It is important to note, however, that findings relating to a donor's age vary and, as such, the explanatory power of this variable should be treated with caution. For example, Whyte (1999), and Schreiber, Sharma, Wright, Glynn, Ownby, Tu *et al.* (2005) found that although younger people were more likely to donate blood, older donors were likely to donate more frequently. Conversely, a study by Flegel *et al.* (2000), which investigated the consistency of donor returns across age groups, did not observe higher return rates as people aged. Based on a large sample of first time donors, they found to their surprise that donor returns across age groups was consistent. This led them to note the limited impact of what had until then had been considered a key predictive variable.

Interaction effects may also occur between a donor's *age* and *gender*. The Blood Transfusion Service in the UK reported that females were more prominent amongst younger donors but older donors were more likely to be males (Barkworth *et al.*, 2002). This finding is consistent with a recent analysis of Australian data for the State of Victoria, which covered all donations made between January 1999 and June 2000 (see Hollingsworth and Wildman, 2004). It was found that a higher proportion of females aged 20 to 29 were likely to donate blood than males in this age category. The proportion of females willing to donate blood declined for a period then increased again in the 40 to 49 age category. The same donation pattern was observed for female donors in the Manawatu region of New Zealand, based on data collected from the New Zealand Blood Service (see Appendix A). As childbirth affects women's eligibility to donate it is to be expected that blood donation rates would decrease for a period in their lives and then potentially increase again following childbearing years.

For this study, the demographic variable, *gender*, had no apparent effect on donation behaviour (see Table 5.10). As most respondents were relatively young there was insufficient variation in the sample to examine gender effects on blood donation behaviour across various age categories.

Respondents' knowledge of blood donation was found to be an important explanatory Labaw type variable, at least for predicting actual (self-reported) donation behaviour (see Table 5.10). Previous blood donation studies have reported mixed findings in regards to the role respondents' knowledge of the blood donation process plays in their decision to donate blood. Allen and Butler (1993) found no direct relationship between knowledge and intention to donate blood. A more recent study by Lemmens *et al.* (2005) also found that knowledge was not a strong predictor of intentions to donate blood. Another recent study, which examined Thai university students' knowledge about blood donation, found that respondents with only 'fair' or 'poor' knowledge of blood donation were 1.7 times more likely to donate blood than those with 'good' knowledge (Wiwanitkit, 2002). Nevertheless, some studies have supported the findings of the current study that greater knowledge of blood donation leads to greater willingness to donate. For example, a study undertaken in Greece found that respondents with a higher knowledge score donated blood more often than those with a low knowledge score (Chliaoutakis, Trakas, Socrataki Lemonidou and Papaioannou, 1994). Adam and Soutar (1999) also found a strong positive relationship between knowledge and willingness to donate blood.

One reason for disagreement about the role 'knowledge' plays in the decision to donate blood may be due to differences in how the concept is measured. As cautioned in Chapter Four, measuring knowledge is not straightforward, and the limitations in the measurement process should be acknowledged along with the subsequent findings. Certainly, of the three Labaw type variables used to predict behaviour (prior and current behaviour, environment and knowledge), 'knowledge' proved to be the most difficult to measure.

An important aspect of measuring knowledge is that the knowledge score obtained is dependent on the questions that are asked. If an important question is omitted, this will be reflected in the knowledge score obtained. Brug, van Vugt, van den Borne,

Brouwers and van Hooff (2000) found that correct knowledge about organ donation (registration) was not significantly associated with predicting willingness to register as an organ donor. However, they acknowledged that one reason for this may have been that the right knowledge questions were not asked. Furthermore, the respondents in Brug *et al.*'s study were young, and the researchers acknowledge that older people may possess a greater awareness of organ donation issues than a younger population. This conclusion could apply equally to measuring other types of behaviours where the knowledge score obtained may vary according to variations in demographic characteristics of the sample.

In particular, a difficulty encountered with this study involved the use of open-ended questions. This aspect of the methodology proved very time consuming in terms of analysis and coding, and required a high level of understanding of blood donation practice and procedures. Reasons were provided in Chapter Four as to the advantages and disadvantages of open versus closed question sets. The identification of variation in degrees of understanding is an important aspect of Labaw's use of knowledge questions, therefore an open-ended question format was used for this study. However, it is unclear whether a closed question set would have provided the same knowledge score, using a simpler and quicker coding process. Certainly, other recent studies in which a knowledge index has been developed have used a closed question set because such a format is considered a simple, direct and efficient way to assess knowledge about a subject (see, for instance, Spitzer, Perrenoud, Desaulles, Camus, van Gele and Perier, 2002; Börsum and Gjermo, 2004; Page and Uncles, 2004; Lemmens, *et al.*, 2005). The need to obtain a knowledge score is an aspect of the operationalisation of Labaw's approach that requires greater investigation. Specifically, further research is needed which compares knowledge scores obtained using open and closed question sets.

The variables *last donation*, *age*, and *knowledge score* were the only Labaw type variables that were statistically significant (see Table 5.10). However, the direction of the coefficients of the remaining variables will be discussed because this provides further insight into the factors associated with respondents' willingness to donate blood. As Royse (1999) opined, null findings can be instructive and need to be shared with the professional community.

The positive coefficient of the variable *received blood* indicates that respondents who had ever received blood or blood products themselves, or who knew others who had received blood or blood products were more likely to donate blood. This finding is consistent with the results of a study by Piliavin and Callero (1991), who also found that persons who reported that they or someone close to them had received blood were more likely to become donors. Similarly, the positive coefficient of the variable *family member donor* indicates that having a family member who has blood donation experience meant that the respondent was more likely to donate blood him or herself. Lee, Piliavin and Call (1999) state that first-time donors are far more likely than the average person to report that at least one parent was a regular blood donor.

Although having a family member who has blood donation experience appears to increase the likelihood that a respondent will donate blood, knowing others, such as friends or colleagues who are experienced donors, does not appear to have a similar positive effect on donor behaviour. The negative coefficient of the variable *know other donors* indicates that knowing others who donate blood meant respondents were less likely to report that they had donated blood themselves. It is not clear why having a family member who has blood donation experience appears to have a more positive effect on donation behaviour than the modelling effect of other donors known to the respondent. It could be surmised that the modelling effect of family members occurs earlier in a respondent's life and thus has greater impact on his or her subsequent behaviour, but this assumption cannot be verified by the data obtained for this study.

Interestingly, the negative coefficient of the variable *organ donor* suggests that respondents who had agreed to become potential organ donors were less likely to report that they had donated blood. This finding is surprising as it could be postulated that someone who is willing to tick the box on his or her driver's licence to potentially become an organ donor would also be more willing to fulfil another altruistic act, namely to donate blood. However, it could also be argued that ticking a box to agree to something that is neither imminent, nor certain, and would only occur after death, is not the same as agreeing to do something that is somewhat painful, on a regular basis, whilst still alive. That is, one altruistic act is not identical to another, and it could be expected that people's behavioural responses to differing altruistic acts may vary also.

## 5.6 SUMMARY

The data for this study were collected from 1008 tertiary institution students and staff. One month prior to a mobile visit by the New Zealand Blood Service (NZBS), respondents were asked to state their behavioural intentions to donate blood. Following the NZBS visit, respondents were contacted to establish their reported blood donation behaviour. The abilities of Ajzen's (1985) theory of planned behaviour and Labaw's (1980) approach to predicting behaviour were compared, using both behavioural intentions and actual (self-reported) donation behaviour as dependent variables. The main findings of this analysis and the managerial implications that arose from them are summarised in the next chapter.

## 6. SUMMARY AND CONCLUSIONS

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### 6.1 INTRODUCTION

The chapter begins with a brief reiteration of the key themes of this study and restatement of the main objectives, followed by a summary of the main findings that emerged from the research. Limitations relating to the survey methodology are also detailed, along with suggestions for future research that arose from aspects of this study.

### 6.2 RESEARCH OVERVIEW

Understanding and predicting human behaviour has been of particular interest to marketers for many years. It has generally been assumed that prediction of behaviour is best achieved by the understanding and measurement of cognitive variables. Ajzen (2001a), for example, states “the ability of attitudes to predict behavioural intentions and overt behaviour continues to be a major focus of theory and research. By far the greatest number of publications on a single topic were concerned with this issue” (*p.* 42).

Based on Fishbein’s (1963) expectancy-value model, the theory of planned behaviour (TPB) has emerged as one of the most influential and popular conceptual frameworks for the study of human action (Ajzen, 2001a). The TPB model is credited with improving predictions of behaviour since the accuracy of predictions based on attitudinal data was earlier questioned by Wicker (1969). This improvement is partly due to Ajzen and Fishbein introducing the notion of correspondence between the attitude-behaviour measures. It is also due to the model taking into account situations in which behaviour is not entirely under voluntary control, as captured in the perceived behavioural control variable. Yet, despite recent improvements in behavioural prediction, questions are still being raised about the performance of attitude models such as the TPB in predicting and explaining intentions and behaviour (Kraus, 1995; Sutton, 1997; Wright and Klyn, 1998; Foxall, 2005). Ajzen (2002) recently conceded

that, despite numerous attempts to improve the limitations and predictive ability of the TPB, “vexing problems remain” (p. 666).

Foxall (2002) argues that the main problem with investigations of human behaviour to date is the prevailing view that prediction can occur from measures of beliefs, attitudes and intentions, regardless of situational factors. Similarly, Aldridge, Guy and Roggenkamp (2003) posit that in some circumstances the initiator of behaviour is a strong situational or environmental factor rather than cognitive influences, which instead follow behaviour. Clearly, there is a need in marketing research to consider alternative approaches to predicting behaviour than those based on attitudes.

One of the few authors to consider an alternative approach is Labaw (1980), who proposes that better behavioural predictions can be made using behavioural variables. Labaw’s approach eschews cognitive variables on two grounds; they are unobservable and the empirical evidence for their effectiveness in predicting behaviour is weak. Hence, she posits that, as a general principle when attempting to predict behaviour, attitude questions should be replaced with questions that can be ‘truthfully’ answered about a respondent’s environment, knowledge and past and current behaviour.

The main objective of this study was to compare the predictive ability of Labaw’s (1980) behavioural approach to predicting behaviour with Ajzen’s (1985, 1988, 1991) attitudinal-based theory of planned behaviour. This objective was addressed by developing a questionnaire that incorporated questions based on each approach to behaviour prediction. The significance of another objective of this study lies in the operationalisation of Labaw’s framework and its implicit assumption that there is a feasible alternative to attitude-based approaches to predicting behaviour.

The vehicle for this research was a study of blood donation behaviour. Tighter screening of New Zealand blood donors in recent years has led to a decrease in the volume of blood collected. 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 to treat medical conditions such as cancer, and because new uses have been found for blood products (Ibrahim and Mobley, 1993; Barkworth, Hibbert, Home and Tagg, 2002). Unfortunately, there are insufficient active blood donors in

New Zealand and worldwide to meet the increased demand for blood. Many studies have investigated blood donation behaviour, but an accurate way to predict it has continued to elude researchers. If a reliable way were found to predict blood donation behaviour, it might be possible to increase donor population percentages above the current 5% to 8% that is typically reported in many countries. Furthermore, insufficient knowledge exists of which variables offer the best understanding and prediction of donors' willingness to donate blood. Another objective of this study was, therefore, to gain greater knowledge of which variables are most likely to predict potential donors' behaviour; such knowledge would help to ensure that efforts to increase the number of blood donors were effectively directed.

A criticism of previous blood donation research is its reliance on behavioural intention as a predictive measure of behaviour. Thus, another objective of this study was to examine the widely held assumption that intention to donate blood is a reliable predictor of actual donation behaviour. Foxall (1983) shares the view that there is a need to ensure in applied research that behaviour itself is the dependent variable. He states, "the number of occasions when the prediction of behaviour from its immediately antecedent intentions is useful or possible in consumer research is severely limited, to say the least" (*p.* 115). Reid and Wood (2002) also acknowledge the need for research that links intention to donate with follow-on behaviour.

### **6.3 CONCLUSIONS**

This study investigated predictions of behavioural intentions to donate blood using OLS regression, and actual (self-reported) blood donation behaviour using logistic regression. Table 6.1 presents a summary of  $R^2$  values obtained for each approach, including extended versions of the TPB, and a model formed from a combination of variables from each approach.

**Table 6.1 Predictive Abilities of the Models Tested**

<b>Model</b>	<b>Behavioural Intention (Adjusted R<sup>2</sup>)</b>	<b>Reported Behaviour (Nagelkerke R<sup>2</sup>)</b>
TPB – Direct Measures	.52	.19
TPB – Indirect Measures	.31	.05
TPB + Moral Obligation	.55	.19
TPB + Past Behaviour	.54	.20
Labaw	.23	.19
Combined Model	.57	.25

Considering first predictions of behavioural intention, the study found both the direct and indirect TPB variables were better predictors of behavioural intention than the Labaw type variables, with adjusted R<sup>2</sup> values of .52 (direct variables) and .31 (indirect variables) reported for the TPB models, compared with adjusted R<sup>2</sup> = .23 for Labaw's approach. An additional 2% of the variance in intention to donate blood was explained by the addition of a *past behaviour* variable to the TPB model, and when a *moral obligation* variable was added to the TPB model an additional 3% of the variance was explained. Although predictions of behavioural intention to donate blood were better using the TPB model, it is important to note that nearly half of the variance in donation intentions remained unexplained. Combining the statistically significant ( $p < .05$ ) variables from the TPB direct measures and Labaw's approach into a combined model achieved a modest improvement in predictive ability, with the explanation of 57% of the variance in behavioural intention to donate blood.

For reported blood donation behaviour, the study found that the standard TPB model and Labaw's approach were equivalent, but that neither model was a good predictor of behaviour (as evidenced by pseudo R<sup>2</sup> values of .19). Although in absolute terms there was no difference in the predictive ability of the two approaches, an important finding of this study was that Labaw's approach was superior to the TPB in terms of ease of application in the field. From a survey research perspective, the TPB questionnaire design is repetitive, some aspects of the question presentation are confusing and, in the

view of some respondents, some questions project a moralistic tone that is offensive. Thus, a strong argument exists for advocating the use of Labaw's approach to questionnaire design for predicting behaviour, in preference to Ajzen's TPB.

Although Labaw's approach was generally easier to apply in the field than the TPB, it should be noted that obtaining a measure of the 'knowledge' component of her approach was problematic. Labaw advocates the use of open-ended questions to measure knowledge. However, coding and analysis of the open-ended knowledge questions was difficult and time consuming. Moreover, a researcher's own level of knowledge of the topic for which he or she wishes to construct a knowledge score plays a vital role in the overall quality of the 'knowledge' data produced. Unless empirical evidence supporting the use of open-ended questions to measure knowledge is forthcoming, use of closed questions to construct a knowledge score is suggested for this aspect of the operationalisation of Labaw's approach.

Combining the statistically significant ( $p = < .05$ ) variables from the standard TPB model and Labaw's approach to form a new model resulted in a modest improvement in predictive strength, as evidenced by the Nagelkerke  $R^2$  value of .25 for the combined model, compared with .19 for the models' individual performances. This finding suggests there is some merit in considering a combination of approaches to predict behaviour, rather than treating behavioural and attitudinal models as discrete alternatives. However, the overall performance of the combined model remained weak, which indicates that other factors are important in the decision to donate blood, beyond the explanation provided by the combined variables used in this study.

Although not a specific objective of this study, the predictive abilities of extended versions of the TPB were also investigated. The predictive ability of the TPB increased marginally with the inclusion of a *past behaviour* variable (Nagelkerke  $R^2$  value = .20), but no improvement in predictive ability occurred when a *moral obligation* variable was added to the TPB model. Hence, the results do not support extending the TPB to include *moral obligation* or *past behaviour*. These variables provide modest support for predicting behavioural intentions, but for the prediction of actual (self-reported) behaviour, little practical gain is to be found in their inclusion in the model.

The TPB indirect (belief-based) measures were not useful for predicting blood donation behaviour (Nagelkerke  $R^2 = .05$ ), and correlations between the direct and indirect TPB variables were not strong ( $r = .44$  to  $r = .51$ ). Ajzen (1991) concedes that the expectancy-value model may not be the best to describe the relationship between direct and indirect measures of the constructs of the theory of planned behaviour. Furthermore, the belief-based questions considerably extend the length of a TPB questionnaire, and anecdotal evidence from this study suggests the questions were not well received by the respondents. Certainly, the findings of this study do not support the inclusion of indirect (belief-based) measures in future TPB studies.

This study also found that behavioural intention to donate blood was not highly correlated with actual (self-reported) donation behaviour. The correlation between behavioural intention and behaviour was weak ( $r = .32$ ). Moreover, for both the TPB and Labaw's approach, the Nagelkerke  $R^2$  measures of explained variance in actual (self-reported) behaviour were lower than the corresponding adjusted  $R^2$  measures of variance in behavioural intention (see Table 6.1). This suggests that little correspondence existed between respondents' stated intentions to donate blood and their actual (self-reported) donation behaviour. Discrepancies between stated intentions and actual (self-reported) behaviour were most apparent for the TPB model, with greater consistency found between the two measures for Labaw's approach.

This finding is important, especially given the widely accepted assumption that the closest prediction of behaviour is provided by measures of behavioural intention (East, 1997). Whilst Ajzen and Fishbein's methodology is credited with improving behavioural predictions, since discrepancies in intention-behaviour measures were first noted, the findings of this study indicate that behavioural intentions correspond only weakly with measures of actual (self-reported) behaviour. Hence researchers are advised to be cautious when estimating expected performance on the basis of measures of behavioural intention.

Another important finding of this study is that the predictive abilities of both the TPB and Labaw's approach were affected by the time interval between stated intentions and performance of the behaviour. For the two research stages of this study, the time interval between stated intentions to donate blood and self-reported donation behaviour

was one week for the pilot study and four weeks for the major study. Table 6.2 presents  $R^2$  values for the two research stages of this study, comparing behavioural intention and actual (self-reported) behaviour measures.

**Table 6.2  $R^2$  Values for the Two Research Stages**

Variables	Behavioural Intention		Reported Behaviour	
	Pilot Study	Major Study	Pilot Study	Major Study
TPB	.50	.52	.36	.19
Labaw	.04	.23	.52	.19

As noted by Randall and Wolff (1994), Ajzen and Fishbein have repeatedly stressed that the measure of intention should be as close as possible to the performance of the behaviour. Ajzen (1985) states that even a temporary delay between assessment of intention and observation of behaviour tends to have a detrimental effect on the prediction of behaviour. Contrary to expectation, given differences in the time measurement interval, the variance in behavioural intention explained by the TPB variables for both the pilot study and the major study was similar, as estimated by adjusted  $R^2 = .50$  for the pilot study compared with adjusted  $R^2 = .52$  for the major study. For Labaw's approach, the ability of the model to predict behavioural intention actually improved for the major study, despite the longer time interval between the measure of intention and performance of the behaviour (as estimated by adjusted  $R^2 = .04$  for the pilot study compared with adjusted  $R^2 = .23$  for the major study).

However, the abilities of both models to predict actual (self-reported) behaviour weakened as the time interval between measures increased. That is, the Nagelkerke  $R^2$  values were lower for the major study, based on a four-week time interval between measures, than corresponding values for the pilot study based on a shorter, one-week time interval. This observation is important as it indicates that findings that are derived from studies in which a short timeframe was used to test the predictive ability of a model are of questionable practical relevance. That is, it cannot be assumed that the

predictive ability of a model extends beyond the timeframe tested and, for a model to have practical utility, researchers need to carefully consider the time interval selected to test the predictive ability of a model if the results are to have any practical relevance.

This study also investigated which variables offered the best explanatory power for predicting blood donation, while bearing in mind the low predictive ability of both models. These were identified as the Labaw type variables *last donation* (the recency of a respondent's last donation), *knowledge score* (respondents' level of knowledge about blood donation) and *age*, and the TPB variables *perceived behavioural control* (respondents' perceived control over performance of a behaviour) and *attitude toward the behaviour*.

The more recently someone last donated, the more likely he or she was to donate blood again. In terms of blood donation research, this finding is not new as it has earlier been reported that most of the blood given is donated by a small minority of regular, repeat donors. Nevertheless, this finding does support Labaw's emphasis on the importance of past behaviour as a predictor of future behaviour. From a managerial perspective, the significance of this finding lies in the suggestion that parallels exist between repeat blood donation behaviour and low-involvement repeat purchase consumer behaviour, with an emphasis on encouragement and reward. As stated in Chapter Two, one way to increase the amount of blood collected is to encourage existing donors to donate more often. Although monetary reward and inducements are not endorsed by blood collection agencies due to ethical concerns, greater emphasis on the use of appropriate, non-monetary incentives to reward and encourage behaviour may be an effective strategy to increase repeat blood donation behaviour. That is, in the same way that loyalty schemes and other behavioural incentives are used to encourage low-involvement repeat purchase consumer behaviour, comparable strategies could be used by blood collection agencies for the purpose of increasing current rates of repeat donation.

Perhaps not surprisingly, it was also found that the more respondents felt able to control the factors that help or hinder their ability to donate blood, the more likely they were to donate. Of importance from a managerial perspective, perceived control of the factors that help or hinder blood donation were found to be a stronger predictor of blood

donation behaviour than either internal thoughts and feelings about the act, or normative influences on the decision to act. Therefore, it is suggested that blood collection agencies concentrate on identifying and promoting the factors that help or hinder the donation process, rather than attempting to alter people's attitudes toward blood donation. Identifying the factors that help or hinder blood donation was not a specific objective of this study, however, factors such as awareness of donation venues and operating hours are likely to impact on a person's ability to donate blood. As such, blood collection agencies need to closely evaluate current services and consider whether these are meeting donors' needs in terms of opportunity to donate, or whether improvements could be implemented. At present blood donation opportunities are limited to mobile collection drives and hospital location visits. A revision in location strategy, such as the provision of a centrally located venue for donation, may improve donors' opportunities to donate, leading to an increase in current blood donor percentages.

This study also found that the more respondents knew about blood donation issues, the more likely they were to donate blood. This suggests that blood collection agencies should promote knowledge and awareness of issues associated with blood donation to potentially increase the number of registered blood donors. Anecdotal evidence from this study indicated that, in general, respondents were not very knowledgeable about blood donation issues. For example, in response to the question "What percentage of New Zealand's population currently donates blood?", 81% of respondents stated a percentage higher than 5%, with responses ranging from 1% to 80%. During the course of interviewing, many respondents asked to be informed of the correct answer, and most were surprised to learn the population percentage of blood donors is around 5%.

Clearly, there is a need for promotional material to focus on educating people about issues associated with blood donation, and this may be more effective in encouraging donation than the emotional appeals that are commonly used, for example, appeals emphasising that donating blood 'saves lives'. In other words, increasing people's factual knowledge of blood donation issues is potentially a more effective promotional strategy to encourage blood donation than the use of emotional images intended to change people's attitudes toward the behaviour.

Despite this conclusion, having a positive attitude toward blood donation is associated with greater willingness to donate blood. It is less apparent how this information is best applied from a managerial perspective. However, as attitude sometimes follows rather than precedes behaviour, it is important for blood collection agencies to focus on the operational factors that improve the donation experience. For example, strategies to decrease waiting time to donate blood are likely to positively influence attitude toward the behaviour, leading to greater willingness to donate blood.

The results also indicated that younger people demonstrated greater willingness to donate blood. Younger populations are currently targeted by blood collection agencies, and the results of this study support continuation of this strategy. However, *gender* was not an important predictor variable, consequently gender related strategies are unlikely to result in an increase in current blood donors.

Other non-significant results suggest that promotional strategies that encourage recipients of donated blood or blood products to donate blood seem likely to be well directed. Similarly, promotional appeals that encourage current donors' family members to donate blood might help increase current donor percentages. However, use of a similar strategy to encourage others known to a donor to donate blood, such as friends and work colleagues, appears less likely to increase the percentage of current donors. The results also suggest that targeting potential organ donors is not likely to increase the number of current donors. However, it could simply be that strategies currently used to encourage potential organ donors to donate blood have not been successful and other promotional avenues should instead be explored for the purpose of encouraging those already demonstrating a willingness to partake in an altruistic act, to also donate blood.

## **6.4 RESEARCH LIMITATIONS**

The main limitation of this study was that self-reported blood donation behaviour was used as the dependent variable, rather than actual blood donation behaviour. Cooperation with the New Zealand Blood Service (NZBS) was sought for the purpose of matching respondents' intentions to donate blood with their actual donation

behaviour, however, due to ethical concerns this was not achieved. Instead, four weeks after obtaining respondents' stated intentions to donate blood, they were contacted directly to obtain their reported donation behaviour.

It is not possible to quantify the potential sensitising effect on behaviour the request for contact details and the subsequent follow up contact with those willing to participate in the survey may have had. Chandon, Morwitz and Reinartz (2005) recently expressed concern that measurement related biases can lead to incorrect inferences about the strength of the relationship between intentions and self-reported behaviour. However, anecdotal evidence from this study suggests 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. Moreover, in a similar study, Pomazal and Jaccard (1976) compared self-reports of behaviour with actual behaviour and found no discrepancy between the measures. Their finding offers support for the methodology used in this study.

This study was based on a sample of tertiary institution students and staff, thus the results obtained could potentially differ from findings based on a general population sample. Furthermore, all interviewing was conducted at tertiary campuses located in the lower North Island of New Zealand. It is acknowledged that a donor sample selected from a narrow geographic region could differ in some way to a sample selected from a wider population distribution. However, a NZBS representative indicated this was unlikely, which provides some confidence in the findings produced. Moreover, there is no reason to suspect this, or the other limitations detailed in this section, might have influenced the relative performance of the two approaches tested.

It should also be acknowledged that, although the total sample size was large ( $n = 1008$ ), the results of this study are based on a relatively small sample of donors (122 respondents reported donating, or attempting to donate, blood). This is an inherent problem of studying low-incidence behaviours. Nevertheless, the sample size of donors used in this study was larger than typically reported in blood donation studies.

Like all studies that use questionnaires, it is conceivable that the use of different questions, different scales, and different scale end-point adjectives in this study may have produced different results. Of course, this limitation is not unique to this study, as the choice of which questions to include, and how to ask them is a fundamental issue relating to survey methodology in general.

## **6.5 SUGGESTIONS FOR FUTURE RESEARCH**

This study provides some support for Labaw's approach to predicting behaviour, however, additional research is needed to further test its predictive ability and to further refine its operationalisation. Furthermore, the findings reported relate to one behaviour only, namely blood donation. To be useful, a predictive model should be applicable to various behaviours. The alternative perspective offered by Labaw is not limited to blood donation; her model is equally applicable to any form of social behaviour. However, to increase confidence in the findings reported here, Labaw's approach needs to be replicated in differing situations and for different behaviours. Moreover, a replication study using actual behaviour as the dependent variable to test the predictive abilities of the models would potentially add weight to these findings. This would also allow comparison of results with this study, thereby examining the suitability of self-reported behaviour as a proxy for actual behaviour in situations where measures of actual behaviour are not available.

A further avenue for future research to arise from this study is the exploration of scale correspondence between behavioural intention and actual behaviour variables. A continuous scale is commonly used to measure behavioural intention, and behaviour is usually measured using a dichotomous yes/no format, consistent with the methodology adopted for this study. However, Courneya and McAuley (1993) and Courneya (1994) argue that scale correspondence is a distinct form of correspondence that has been neglected, and that future research should consider this issue more closely. They suggest that failure to obtain scale correspondence may have an impact on the intention-behaviour relationship, leading to the highly variable findings that exist. Although the focus of Courneya and McAuley's concern is in the area of physical activity, future research could focus in the area of blood donation, to investigate what difference, if any,

using a dichotomous scale to measure behavioural intention makes to the relationship between intention and behaviour.

Comparing knowledge scores obtained from closed question sets versus open-ended question sets provides an additional direction for future research. As explained previously, a difficulty encountered with this study involved the use of open-ended questions. This aspect of the methodology proved very time consuming in terms of analysis and coding, and required a high level of understanding of blood donation practice and procedures. Further research could establish whether a closed question set would provide the same knowledge score as obtained from an open-ended question set, using a simpler and quicker coding process.

Considering blood donation research specifically, future studies could explore a longitudinal approach to predicting blood donation behaviour. Consistent with Ajzen's requirement for TACT (target, action, context and time), the findings of this study are based on one performance of the behaviour, in a highly specific timeframe and donation location. James and Matthews (1993, 1996) suggest looking beyond single act measures of blood donation behaviour, and describe a new framework for measuring blood donor behaviour based on donation cycles. Their emphasis is on the retention of existing donors, and increasing the donation cycle between donations. Nevertheless, their framework provides an opportunity to extend the findings of this study, investigating the predictive ability of models based on long-term donation behaviour rather than a single act.

Future research could also explore the utility of a predictive variable that relates to convenience of blood donation opportunity. Convenience of the donation process has been found to impact on the donation decision, regardless of attitude toward donation (Drake, Finkelstein and Sapolsky, 1982; Ferguson, 1996). Gillespie and Hillyer (2002) contend that issues of time and donor convenience may be considered even more significant obstacles to blood donation now than in previous decades. This suggestion is supported by a recent Canadian study by Hupfer, Taylor and Letwin (2005), who found that factors relating to convenience in terms of the opportunity to donate blood were important in the donation decision. This suggests that improvements in customer service may be more effective at encouraging blood donation than changing people's

internal feelings about the act. Convenience of opportunity to donate may already be captured by the explanatory power of the perceived behavioural control variable, which represents perceived control over the factors that help or hinder respondents' ability to donate blood, if they wish to do so. However, given recent findings that support inclusion of an *opportunity to donate* variable, the unique contribution to variance in behaviour potentially offered by this variable should be considered in future blood donation studies.

## 6.6 SUMMARY

Cognitive models of behaviour, such as Ajzen's (1985) theory of planned behaviour, have been the subject of much study and refinement over many years. However, the predictive ability of such models remains relatively poor. Rather than continuing to extend these models in the hope of improving their predictive ability, it is time to consider alternative approaches such as the one proposed by Labaw (1980). This study represents a step in that direction.

Predicting and explaining human behaviour is difficult, and the problem of how best to address this issue was not resolved by this study. However, the findings contribute to the existing body of knowledge in the area of predicting human behaviour in general, and predicting blood donation specifically. Labaw's approach, operationalised in this study, presents a feasible alternative to attitude-based approaches to predicting behaviour. Furthermore, the results of this study are based on a closer approximation of actual behaviour than behavioural intention, the measure typically used in so-called behavioural studies. Given that it is behaviour not intentions that most decision makers are ultimately interested in, this was an important methodological consideration and, arguably, increases confidence in the utility of the findings produced.

Worldwide there is a shortage of active blood donors, and the problem of attracting and retaining sufficient donors to meet demand for blood and blood products continues (Hollingsworth and Wildman, 2004; Hupfer, Taylor and Letwin, 2005; Lemmens, Abraham, Hoekstra, Ruiters, De Kort, Brug *et al.*, 2005). This study has identified variables that help explain the decision to donate blood. Thus, the findings offer blood

collection agencies guidance with the task of formulating specific strategies to address blood donor shortages. However, accurately predicting who is most likely to donate blood remains problematic, and further research is needed to extend the findings reported in this study. As previously stated by Burnett and Leigh (1986), “the development of an explanatory model that identifies the salient variables and relationships involved in the blood donation process remains unfinished” (p. 38).

## 7. REFERENCES

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- Adam, D., & Soutar, G. N. (1999). *A proposed model of the blood donation process*. Paper presented at the Australian and New Zealand Marketing Academy Conference, Sydney: Australia.
- Ajzen, I. (1985). From intentions to actions: A theory of planned behaviour. In J. Kuhl & J. Bechmann (Eds.), *Action control: from cognition to behaviour*. Berlin: Springer-Verlag, 11-39.
- Ajzen, I. (1987). Attitudes, traits, and actions: Dispositional prediction of behavior in personality and social psychology. *Advances in Experimental Social Psychology*, 20, 1-63.
- Ajzen, I. (1988). *Attitudes, personality, and behavior*. USA: The Dorsey Press.
- Ajzen, I. (1991). The theory of planned behaviour. *Organizational Behaviour and Human Decision Processes*, 50(2), 179-211.
- Ajzen, I. (2001a). Nature and operation of attitudes. *Annual Review of Psychology*, 52, 27-58.
- Ajzen, I. (2001b). *Constructing a TPB questionnaire: Conceptual and methodological considerations*. Retrieved from <http://www.people.umass.edu/aizen/tpb.html>.
- Ajzen, I. (2002). Perceived behavioural control, self-efficacy, locus of control, and the theory of planned behaviour. *Journal of Applied Social Psychology*, 32(4), 665-683.
- Ajzen, I., & Driver, B. L. (1991). Prediction of leisure participation from behavioural, normative, and control beliefs: An application of the theory of planned behaviour. *Leisure Sciences*, 13, 185-204.
- Ajzen, I., & Driver, B. L. (1992). Application of the theory of planned behavior to leisure choice. *Journal of Leisure Research*, 24(3), 207-224.
- Ajzen, I., & Fishbein, M. (1970). The prediction of behaviour from attitudinal and normative variables. *Journal of Experimental Social Psychology*, 6, 466-487.
- Ajzen, I., & Fishbein, M. (1973). Attitudinal and normative variables as predictors of specific behaviours. *Journal of Personality and Social Psychology*, 27(1), 41-57.
- Ajzen, I., & Fishbein, M. (1974). Factors influencing intentions and the intention-behavior relation. *Human Relations*, 27(1), 1-15.
- Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations. A theoretical analysis and review of empirical research. *Psychological Bulletin*, 84(5), 888-918.

- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behaviour*. USA: Prentice-Hall, Inc.
- Ajzen, I., & Madden, T. J. (1986). Prediction of goal-directed behaviour: Attitudes, intentions, and perceived behavioural control. *Journal of Experimental Social Psychology*, 22(5), 453-474.
- Alba, J. W., & Hutchinson, J. W. (1987). Dimensions of consumer expertise. *Journal of Consumer Research*, 13(4), 411-454.
- Aldridge, A., Guy, B., & Roggenkamp, S. (2003). From attitude formation to behavioral response in organ donation: Using marketing to increase consent rates. *Health Marketing Quarterly*, 20(3), 21-35.
- Allen, C. T., Machleit, K. A., & Kleine, S. S. (1992). A comparison of attitudes and emotions as predictors of behavior at diverse levels of behavioral experience. *Journal of Consumer Research*, 18, 493-504.
- Allen, J., & Butler, D. D. (1993). Assessing the effects of donor knowledge and perceived risk on intentions to donate blood. *Journal of Health Care Marketing*, 13(3), 26-33.
- Allen, J., & Maddox, N. (1990). Segmenting blood donors by their perceptions and awareness about blood donation. *Health Marketing Quarterly*, 7(1/2), 177-193.
- Allport, G. W. (1935). Attitudes. In E. Aronson & A. R. Pratkanis (Eds.), *Social Psychology*. (1993 ed., Vol. 1, pp. 565-575). Great Britain: Edward Elgar Publishing Ltd.
- Andaleeb, S. S., & Basu, A. K. (1995). Explaining blood donation: The trust factor. *Journal of Health Care Marketing*, 15(1), 42-48.
- Andreasen, A. R. (1995). *Marketing social change*. San Francisco: Jossey-Bass Publishers.
- Armitage, C. J., & Conner, M. (2001a). Social cognitive determinants of blood donation. *Journal of Applied Social Psychology*, 31(7), 1431-1457.
- Armitage, C. J., & Connor, M. (2001b). Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology*, 40(4), 471-499.
- Bagozzi, R. P. (1981). Attitudes, intentions, and behaviour: A test of some key hypotheses. *Journal of Personality and Social Psychology*, 41(4), 607-627.
- Bagozzi, R. P. (1984). Expectancy-value attitude models: An analysis of critical measurement issues. *International Journal of Research in Marketing*, 1(4), 295-310.
- Bagozzi, R. P. (1985). Expectancy-value attitude models: An analysis of critical theoretical issues. *International Journal of Research in Marketing*, 2(1), 43-60.
- Bagozzi, R. P. (1988). The rebirth of attitude research in marketing. *Journal of the Market Research Society*, 30(2), 163-195.

- Bagozzi, R. P., & Kimmel, S. K. (1995). A comparison of leading theories for the prediction of goal-directed behaviours. *British Journal of Social Psychology*, 34(4), 437-461.
- Bagozzi, R. P., & Warshaw, P. R. (1990). Trying to consume. *Journal of Consumer Research*, 17(2), 127-140.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioural change. *Psychological Review*, 84(2), 191-215.
- Barkworth, L., Hibbert, S., Home, S., & Tagg, S. (2002). Giving at risk? Examining perceived risk and blood donation behaviour. *Journal of Marketing Management*, 18, 905-922.
- Beck, L., & Ajzen, I. (1991). Predicting dishonest actions using the theory of planned behavior. *Journal of Research in Personality*, 25(3), 285-301.
- Bem, D. J. (1967). Self-perception: An alternative interpretation of cognitive dissonance phenomena. *Psychological Review*, 74(3), 183-200.
- Boe, G. P., & Ponder, L. D. (1981). Blood donors and non-donors: A review of the research. *American Journal of Medical Technology*, 47(4), 248-253.
- Börsum, K. M., & Gjeramo, P. E. (2004). Relationship between knowledge and attitudes regarding HIV/AIDS among dental school employees and students. *European Journal of Dental Education*, 8(3), 105-110.
- Bradburn, N. M. (1983). Response effects. In P. H. Rossi, J. D. Wright & A. B. Anderson (Eds.), *Handbook of Survey Research*. USA: Academic Press, Inc.
- Breckler, S. J. (1994). Memory for the experience of donating blood: Just how bad was it? *Basic and Applied Social Psychology*, 15(4), 467-488.
- Breckler, S. J., & Wiggins, E. C. (1989). Scales for the measurement of attitudes towards blood donation. *Transfusion*, 29(5), 401-404.
- Brennan, M. (1995). Constructing demand curves from purchase probability data: An application of the Juster scale. *Marketing Bulletin*, 6, 51-58.
- Brucks, M. (1985). The effects of product class knowledge on information search behaviour. *Journal of Consumer Research*, 12, 1-16.
- Brucks, M. (1986). A typology of consumer knowledge content. *Advances in Consumer Research*, 13(1), 58-63.
- Brug, J., van Vugt, M., van den Borne, B., Brouwers, A., & van Hooff, H. (2000). Predictors of willingness to register as an organ donor among Dutch adolescents. *Psychology and Health*, 15, 357-368.
- Burnett, J. J. (1981). Psychographic and demographic characteristics of blood donors. *Journal of Consumer Research*, 8, 62-66.

- Burnett, J. J., & Leigh, J. H. (1986). Distinguishing characteristics of blood donor segments defined in terms of donation frequency. *Journal of Health Care Marketing*, 6(2), 38-48.
- Burnkrant, R. E., & Page, T. J. (1988). The structure and antecedents of the normative and attitudinal components of Fishbein's theory of reasoned action. *Journal of Experimental Social Psychology*, 24, 66-87.
- Chandon, P., Morwitz, V. G., & Reinartz, W. J. (2005). Do intentions really predict behaviour? Self-generated validity effects in survey research. *Journal of Marketing*, 69(April), 1-14.
- Chang, H. W., Piliavin, J. A., & Callero, P. L. (1988). Role identity and reasoned action in the prediction of repeated behaviour. *Social Psychology Quarterly*, 51(4), 303-317.
- Chliaoutakis, J., Trakas, D. J., Socrataki, F., Lemonidou, C., & Papaioannou, D. (1994). Blood donor behaviour in Greece: Implications for health policy. *Social Science and Medicine*, 38(10), 1461-1467.
- Churchill, G. A. (1979). A paradigm of developing better measures of marketing constructs. *Journal of Marketing Research*, 16(1), 64-73.
- Churchill, G. A., & Peter, J. P. (1984). Research design effects on the reliability of rating scales: A meta-analysis. *Journal of Marketing Research*, 21(4), 360-375.
- Cialdini, R. B., & Ascani, K. (1976). Test of a concession procedure for inducing verbal, behavioral, and further compliance with a request to give blood. *Journal of Applied Psychology*, 61(3), 295-300.
- Condie, S. J., Warner, W. K., & Gillman, D. C. (1976). Getting blood from collective turnips: Volunteer donation in mass blood drives. *Journal of Applied Psychology*, 61(3), 290-294.
- Conner, M., & Armitage, C. J. (1998). Extending the theory of planned behavior: A review and avenues for further research. *Journal of Applied Social Psychology*, 28(15), 1429-1464.
- Courneya, K. S. (1994). Predicting repeated behavior from intention: The issue of scale correspondence. *Journal of Applied Social Psychology*, 24(7), 580-594.
- Courneya, K. S., & McAuley, E. (1993). Predicting physical activity from intention: Conceptual and methodological issues. *Journal of Sport and Exercise Psychology*, 15, 50-62.
- Day, D., Gan, B., Gendall, P., & Esslemont, D. (1991). Predicting purchase behaviour. *Marketing Bulletin*, 2, 18-30.
- Dillman, D. A. (1978). *Mail and Telephone Surveys*. New York: John Wiley & Sons.
- Drake, A. W., Finkelstein, S. N., & Sapolsky, H. M. (1982). *The American blood supply*. USA: The Massachusetts Institute of Technology (MIT Press).

- Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. USA: Harcourt Brace Jovanovich.
- East, R. (1990). *Changing Consumer Behaviour*. London: Cassell Educational Limited.
- East, R. (1992). The effect of experience on the decision making of expert and novice buyers. *Journal of Marketing Management*, 8(2), 167-176.
- East, R. (1993). Investment decisions and the theory of planned behaviour. *Journal of Economic Psychology*, 14(2), 337-375.
- East, R. (1997). *Consumer behaviour: Advances and applications in marketing*. London: Prentice Hall.
- East, R. (2000). Complaining as planned behaviour. *Psychology & Marketing*, 17(12), 1077-1095.
- Esslemont, D., Hamilton-Gibbs, D., & McGuinness, D. (1992). Predicting demand for frequently purchased items. *Marketing Bulletin*, 3, 18-23.
- Evans, M. G. (1991). The problem of analysing multiplicative composites. *American Psychologist*, 46(1), 6-15.
- Farley, S. D., & Stasson, M. F. (2003). Relative influences of affect and cognition on behavior: Are feelings or beliefs more related to blood donation intentions? *Experimental Psychology*, 50(1), 55-62.
- Fazio, R. H., & Zanna, M. P. (1981). Direct experience and attitude-behavior consistency. *Advances in Experimental Social Psychology*, 14, 161-202.
- Ferguson, E. (1996). Predictors of future behaviour: A review of the psychological literature on blood donation. *British Journal of Health Psychology*, 1, 287-308.
- Ferguson, E., & Bibby, P. A. (2002). Predicting future blood donor returns: Past behaviour, intentions, and observer effects. *Health Psychology*, 21(5), 513-518.
- Ferrari, J. R., Barone, R. C., Jason, L. A., & Rose, T. (1986). The use of incentives to increase blood donations. *The Journal of Social Psychology*, 125(6), 791-793.
- Ferrari, J. R., & Lippé, M. R. (1992). Non-compliance with persuasive appeals for a pro-social, altruistic act: blood donating. *Journal of Applied Social Psychology*, 22(2), 83-101.
- Festinger, L. (1957). *A theory of cognitive dissonance*. London: Tavistock.
- Fishbein, M. (1963). An investigation of the relationships between beliefs about an object and the attitude toward that object. *Human Relations*, 16(3), 233-239.
- Fishbein, M. (1967). *Readings in attitude theory and measurement*. USA: John Wiley & Sons.

- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, Massachusetts: Addison-Wesley Publishing Company.
- Flegel, W. A., Besenfelder, W., & Wagner, F. F. (2000). Predicting a donor's likelihood of donating within a preselected time interval. *Transfusion Medicine*, 10(3), 181-192.
- Flynn, L. R., & Goldsmith, R. E. (1999). A short, reliable measure of subjective knowledge. *Journal of Business Research*, 46(1), 57-66.
- Foss, R. D., & Dempsey, C. B. (1979). Blood donation and the foot-in-the-door technique: A limiting case. *Journal of Personality and Social Psychology*, 37(4), 580-590.
- Foxall, G. R. (1980). *Consumer behaviour: A practical guide*. London: Croom Helm Ltd.
- Foxall, G. R. (1983). *Consumer choice*. London: Macmillan Press.
- Foxall, G. R. (1986). Consumers' intentions and behaviour. *Journal of the Market Research Society*, 26, 231-241.
- Foxall, G. R. (1997). *Marketing psychology: The paradigm in the wings*. London: Macmillan Press.
- Foxall, G. R. (2002). Marketing's attitude problem - and how to solve it. *Journal of Customer Behaviour*, 1, 19-48.
- Foxall, G. R. (2005). *Understanding consumer choice*. UK: Palgrave MacMillan.
- Foxall, G. R., Goldsmith, R. E., & Brown, S. (1998). *Consumer psychology for marketing (2nd Ed)*. London: International Thompson Business Press.
- Gagne, C., & Godin, G. (2000). The theory of planned behaviour: Some measurement issues concerning belief-based variables. *Journal of Applied Social Psychology*, 30(10), 2173-2193.
- Gendall, P. (1998). A framework for questionnaire design: Labaw revisited. *Marketing Bulletin*, 9, 28-39.
- Giles, M., & Cairns, E. (1995). Blood donation and Ajzen's theory of planned behaviour: An examination of perceived behavioural control. *British Journal of Social Psychology*, 34, 173-188.
- Giles, M., McClenahan, C., Cairns, E., & Mallet, J. (2004). An application of the theory of planned behaviour to blood donation: The importance of self-efficacy. *Health Education Research*, 19(4), 380-391.
- Gillespie, T. W., & Hillyer, C. D. (2002). Blood donors and factors impacting the blood donation decision. *Transfusion Medicine Reviews*, 16(2), 115-130.

- Godin, G., & Kok, G. (1996). The theory of planned behaviour: A review of its applications to health-related behaviors. *American Journal of Health Promotion, 11*(2), 87-98.
- Gorsuch, R. L., & Ortberg, J. (1983). Moral obligation and attitudes: Their relation to behavioural intentions. *Journal of Personality and Social Psychology, 44*(5), 1025-1028.
- Gross, S. J., & Niman, C. M. (1975). Attitude-behavior consistency: A review. *Public Opinion Quarterly, 39*(3), 358-368.
- Harland, P., Staats, H., & Wilke, H. A. M. (1999). Explaining Proenvironmental intention and behavior by personal norms and the theory of planned behavior. *Journal of Applied Social Psychology, 29*(12), 2505-2528.
- Hayes, T. J., Dwyer, F. R., Greenwalt, T. J., & Coe, N. A. (1984). A comparison of two behavioural influence techniques for improving blood donor recruitment. *Transfusion, 24*(5), 399-403.
- Holdershaw, J., Gendall, P., & Wright, M. (2003). Predicting willingness to donate blood. *Australasian Marketing Journal, 11*(1), 87-96.
- Hollingsworth, B., & Wildman, J. (2004). What population factors influence the decision to donate blood? *Transfusion Medicine, 14*, 9-12.
- Hupfer, M. E., Taylor, D. W., & Letwin, J. A. (2005). Understanding Canadian student motivations and beliefs about giving blood. *Transfusion, 45*(2), 149-161.
- Ibrahim, N. A., & Mobley, M. F. (1993). Recruitment and retention of blood donors: A strategic linkage approach. *Health Care Management Review, 18*(3), 67-73.
- James, R. C., & Matthews, D. E. (1993). The donation cycle: A framework for the measurement and analysis of blood donor return behaviour. *Vox Sanguinis, 64*, 37-42.
- James, R. C., & Matthews, D. E. (1996). Analysis of blood donor return behaviour using survival regression models. *Transfusion Medicine, 6*(1), 21-30.
- Jason, L. A., Jackson, K., & Obradovic, J. L. (1986). Behavioral approaches in increasing blood donations. *Evaluation and the Health Professions, 9*(4), 439-448.
- Jason, L. A., Rose, T., Ferrari, J. R., & Barone, R. (1984). Personal versus impersonal methods for recruiting blood donations. *The Journal of Social Psychology, 123*, 139-140.
- Jones, R. P. O., Prasad, V., Kuruvatti, J., Tahir, N., Whitaker, P., Dawson, A. S. J., *et al.* (2003). Remuneration for blood donation and attitudes towards blood donation and receipt in Leeds. *Transfusion Medicine, 13*, 131-140.
- Juster, F. T. (1966). *Consumer buying intentions and purchase probability: An experiment in survey design.* (Occasional Paper 99). New York: National Bureau of Economic Research.

- Kazdin, A. E., & Bryan, J. H. (1971). Competence and volunteering. *Journal of Experimental Social Psychology*, 7(1), 87-97.
- Keown, J. (1997). The gift of blood in Europe: An ethical defence of EC directive 89/381. *Journal of Medical Ethics*, 23(2), 96-100.
- Kirk-Smith, M. (1998). Psychological issues in questionnaire-based research. *Journal of the Market Research Society*, 40(3), 223-236.
- Knight, R. J. (1983). The stimulation and planning of blood donation: A marketing problem. *European Journal of Marketing*, 17(6), 65-73.
- Kraus, S. J. (1995). Attitudes and the prediction of behaviour: A meta-analysis of the empirical literature. *Personality and Social Psychology Bulletin*, 21(1), 58-75.
- Krosnick, J. A. (2002). The causes of no-opinion responses to attitude measures in surveys: They are rarely what they appear to be. In R. M. Groves, D. A. Dillman, J. L. Eltinge & R. J. A. Little (Eds.), *Survey Nonresponse*. USA: John Wiley & Sons.
- Kushnir, T. (1980). Emotional arousal and affiliation among blood donors. *European Journal of Social Psychology*, 10, 201-205.
- Labaw, P. J. (1980). *Advanced questionnaire design*. USA: Abt Books.
- LaPiere, R. T. (1934). Attitudes vs. actions. In E. Aronson & A. R. Pratkanis (Eds.), *Social Psychology* (Vol. 1, pp. 576-583). Great Britain: Edward Elgar Publishing Ltd.
- LaTour, S. A., & Manrai, A. K. (1989). Interactive impact of informational and normative influence on donations. *Journal of Marketing Research*, 26(August), 327-335.
- Lee, L., Piliavin, J. A., & Call, V. R. A. (1999). Giving time, money, and blood: Similarities and differences. *Social Psychology Quarterly*, 62(3), 276-290.
- Leibrecht, B. C., Hogan, J. M., Luz, G. A., & Tobias, K. I. (1976). Donor and nondonor motivations. *Transfusion*, 16(2), 182-189.
- Lemmens, K. P. H., Abraham, C., Hoekstra, T., Ruiter, R. A. C., De Kort, W. L. A. M., Brug, J., *et al.* (2005). Why don't young people volunteer to give blood? An investigation of the correlates of donation intentions among young nondonors. *Transfusion*, 45, 945-955.
- Leone, L., Perugini, M., & Ercolani, A. P. (1999). A comparison of three models of attitude-behaviour relationships in the studying behaviour domain. *European Journal of Social Psychology*, 29(2-3), 161-189.
- Liefeld, J. (1999). The relative importance of the size, content and pictures on cigarette package warning messages. Retrieved from <http://www.hc-sc.gc.ca/hecs-sesc/tobacco/pdf/liefeld-eng.pdf>.

- Lightman, E. S. (1981). Continuity in social policy behaviours: The case of voluntary blood donorship. *Journal of Social Policy*, 10(1), 53-79.
- Lipsitz, A., Kallmeyer, K., Ferguson, M., & Abas, A. (1989). Counting on blood donors: Increasing the impact of reminder calls. *Journal of Applied Social Psychology*, 19(13), 1057-1067.
- Liska, A. E. (1984). A critical examination of the causal structure of the Fishbein/Ajzen attitude-behaviour model. *Social Psychology Quarterly*, 47(1), 61-74.
- Madden, T. J., Ellen, P. S., & Ajzen, I. (1992). A comparison of the theory of planned behaviour and the theory of reasoned action. *Personality and Social Psychology Bulletin*, 18(1), 3-9.
- Marks, D. F. (1996). Health psychology in context. *Journal of Health Psychology*, 1(1), 7-21.
- McGuire, W. J. (1985). Attitudes and attitude change. In G. Lindzey & E. Aronson (Eds.), *The handbook of social psychology*. (3rd ed., Vol. 2, pp. 233-346). New York: Random House.
- Mondak, J. J. (2001). Developing valid knowledge scales. *American Journal of Political Science*, 45(1), 224-238.
- Netemeyer, R. G., Burton, S., & Johnston, M. (1991). A comparison of two models for the prediction of volitional and goal-directed behaviors: A confirmatory analysis approach. *Social Psychology Quarterly*, 54(2), 87-100.
- Nonis, S. A., Ford, C. W., Logan, L., & Hudson, G. (1996). College students' blood donation behaviour: Relationship to demographics, perceived risk, and incentives. *Health Marketing Quarterly*, 13(4), 33-46.
- Nord, W. R., & Peter, J. P. (1980). A behavior modification perspective on marketing. *Journal of Marketing*, 44(2), 36-47.
- Norman, P., & Smith, L. (1995). The theory of planned behaviour and exercise: An investigation into the role of prior behaviour, behavioural intentions and attitude variability. *European Journal of Social Psychology*, 25(4), 403-415.
- Osborne, D. J., & Bradley, S. (1975). Blood donor and nondonor motivation: A transnational replication. *Journal of Applied Psychology*, 60(3), 409-410.
- Olson, J. M., & Zanna, M. P. (1993). Attitudes and attitude change. *Annual Review of Psychology*, 44, 1-23.
- Oppenheim, A. N. (1992). *Questionnaire design, interviewing and attitude measurement*. London: Pinter Publishers Ltd.
- Oswalt, R. M. (1977). A review of blood donor motivation and recruitment. *Transfusion*, 17(2), 123-135.
- Oswalt, R. M., & Gordon, J. (1993). Blood donor motivation: A survey of minority college students. *Psychological Reports*, 72, 785-786.

- Oswalt, R. M., & Napoliello, M. (1974). Motivations of blood donors and nondonors. *Journal of Applied Psychology, 59*(1), 122-124.
- Ouellette, J. A., & Wood, W. (1998). Habit and intention in everyday life: The multiple processes by which past behaviour predicts future behaviour. *Psychological Bulletin, 124*(1), 54-74.
- Page, K., & Uncles, M. (2004). Consumer knowledge of the World Wide Web: Conceptualization and measurement. *Psychology & Marketing, 21*(8), 573-591.
- Pampel, F. C. (2000). *Logistic regression: A primer*. USA: Sage Publications.
- Paulhus, D. L., Shaffer, D. R., & Downing, L. L. (1977). Effects of making blood donor motives salient upon donor retention: A field experiment. *Personality and Social Psychology Bulletin, 3*, 99-102.
- Perkins, K. A. (1987). The storage of cadaver donor organs for transplantation. *American Psychologist, 42*(10), 921-930.
- Perugini, M., & Bagozzi, R. P. (2001). The role of desires and anticipated emotions in goal-directed behaviours: Broadening and deepening the theory of planned behaviour. *British Journal of Social Psychology, 40*(1), 79-98.
- Peter, J. P. (1979). Reliability: A review of psychometric basics and recent marketing practices. *Journal of Marketing Research, 16*(1), 6-17.
- Petty, R. E., Wegener, D. T., & Fabrigar, L. R. (1997). Attitudes and attitude change. *Annual Review of Psychology, 48*(1), 609-647.
- Piliavin, J. A. (1990). Why do they give the gift of life? A review of research on blood donors since 1977. *Transfusion, 30*(5), 444-459.
- Piliavin, J. A., & Callero, P. L. (1991). *Giving blood: The development of an altruistic identity*. USA: The Johns Hopkins University Press.
- Piliavin, J. A., Callero, P. L., & Evans, D. E. (1982). Addiction to altruism? Opponent-process theory and habitual blood donation. *Journal of Personality and Social Psychology, 43*(6), 1200-1213.
- Pomazal, R. J., & Jaccard, J. J. (1976). An informational approach to altruistic behaviour. *Journal of Personality and Social Psychology, 33*(3), 317-326.
- Raats, M. M., Shepherd, R., & Sparks, P. (1995). Structure of the theory of planned behaviour. *Journal of Applied Social Psychology, 25*(6), 484-494.
- Radley, A., & Kennedy, M. (1995). Charitable giving by individuals: A study of attitudes and practice. *Human Relations, 48*(6), 685-709.
- Randall, D. M., & Wolff, J. A. (1994). The time interval in the intention-behaviour relationship: Meta-analysis. *British Journal of Social Psychology, 33*(4), 405-418.

- Rapport, F. L., & Maggs, C. J. (2002). Titmuss and the gift relationship: Altruism revisited. *Journal of Advanced Nursing*, 40(5), 495-503.
- Reid, M., & Wood, A. (2002). *Motivating non-donors to donate blood*. Paper presented at the Australian and New Zealand Marketing Academy Conference, Melbourne: Australia.
- Rhodes, R. E., & Courneya, K. S. (2003). Investigating multiple components of attitude, subjective norm, and perceived control: An examination of the theory of planned behaviour in the exercise domain. *British Journal of Social Psychology*, 42(1), 129-146.
- Rossiter, J. R. (2002). The c-oar-se procedure for scale development in marketing. *International Journal of Research in Marketing*, 19(4), 305-335.
- Royse, D. (1999). Exploring ways to retain first-time volunteer blood donors. *Research on Social Work Practice*, 9(1), 76-85.
- Rushton, J. P., & Campbell, A. C. (1977). Modeling, vicarious reinforcement and extraversion on blood donating in adults: Immediate and long-term effects. *European Journal of Social Psychology*, 7(3), 297-306.
- Ryan, M. J. (1982). Behavioral intention formation: The interdependency of attitudinal and social influence variables. *Journal of Consumer Research*, 9, 263-278.
- Ryan, M. J., & Bonfield, E. H. (1975). The Fishbein extended model and consumer behavior. *Journal of Consumer Research*, 2(2), 118-136.
- Ryan, M. J., & Bonfield, E. H. (1980). Fishbein's intentions model: A test of external and pragmatic validity. *Journal of Marketing*, 44(2), 82-95.
- Sarason, I. G., Sarason, B. R., Pierce, G. R., Shearin, E. N., & Sayers, M. H. (1991). A social learning approach to increasing blood donations. *Journal of Applied Social Psychology*, 21(11), 896-918.
- Sarason, I. G., Sarason, B. R., Slichter, S. J., Beatty, P. G., Meyer, D. M., & Bolgiano, D. C. (1993). Increasing participation of blood donors in a bone-marrow registry. *Health Psychology*, 12(4), 272-276.
- Schifter, D. E., & Ajzen, I. (1985). Intention, perceived control, and weight loss: An application of the theory of planned behaviour. *Journal of Personality and Social Psychology*, 49(3), 843-851.
- Schmidt, F. L. (1973). Implications of a measurement problem for expectancy theory research. *Organizational Behaviour and Human Performance*, 10(2), 243-251.
- Schreiber, G. B., Sharma, U. K., Wright, D. J., Glynn, S. A., Ownby, H. E., Tu, Y., et al. (2005). First year donation patterns predict long-term commitment for first-time donors. *Vox Sanguinis*, 88, 114-121.
- Schwartz, S. H. (1970). Elicitation of moral obligation and self-sacrificing behaviour: An experimental study of volunteering to be a bone marrow donor. *Journal of Personality and Social Psychology*, 15(4), 283-293.

- Schwartz, S. H., & Tessler, R. C. (1972). A test of a model for reducing measured attitude-behaviour discrepancies. *Journal of Personality and Social Psychology*, 24(2), 225-236.
- Sheatsley, P. B. (1983). Questionnaire construction and item writing. In P. H. Rossi, J. D. Wright & A. B. Anderson (Eds.), *Handbook of Survey Research*. USA: Academic Press, Inc.
- Sheeran, P., & Orbell, S. (1999). Augmenting the theory of planned behaviour: Roles for anticipated regret and descriptive norms. *Journal of Applied Social Psychology*, 29(10), 2107-2142.
- Sheppard, B. H., Hartwick, J., & Warshaw, P. R. (1988). The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. *Journal of Consumer Research*, 15(3), 325-343.
- Singh, J. (2004). Tackling measurement problems with item response theory: Principles, characteristics, and assessment, with an illustrative example. *Journal of Business Research*, 57(2), 184-208.
- Skinner, B. F. (1977). Why I am not a cognitive psychologist. *Behaviourism*, 5(2), 1-10.
- Sojka, B. N., & Sojka, P. (2003). The blood donation experience: perceived physical, psychological and social impact of blood donation on the donor. *Vox Sanguinis*, 84, 120-128.
- Spitzer, A., Perrenoud, B., Desaulles, C., Camus, D., van Gele, P., & Perier, J. (2002). Swiss nurses' knowledge related to health care reforms: An exploratory study. *Health and Nursing Policy Issues*, 38(4), 329-340.
- Surgenor, D. M., & Cervený, J. F. (1978). A study of the conversion from paid to altruistic blood donors in New Mexico. *Transfusion*, 18(1), 54-63.
- Sutton, S. (1997). Theory of Planned Behaviour. In A. Baum, S. Newman, J. Weinman, R. West & C. McManus (Eds.), *Cambridge handbook of psychology, health and medicine*. (pp. 177-180). Cambridge, UK: Cambridge University Press.
- Sutton, S. (1998). Predicting and explaining intentions and behaviour: How well are we doing? *Journal of Applied Social Psychology*, 28(15), 1317-1338.
- Titmuss, R. M. (1970). *The gift relationship: From human blood to social policy*. London: Allen & Unwin Ltd.
- Towriss, J. G. (1984). A new approach to the use of expectancy value models. *Journal of the Market Research Society*, 26(1), 63-75.
- Tuck, M. (1976). *How do we choose: A study in consumer behaviour*. London: Methuen.
- von Schubert, H. (1994). Donated blood - gift or commodity? Some economic and ethical considerations on voluntary vs. commercial donation of blood. *Social Science and Medicine*, 39(2), 201-206.

- Warshaw, P. R. (1980). Predicting purchase and other behaviors from general and contextually specific intentions. *Journal of Marketing Research*, 17(1), 26-33.
- Weissberg, N. C. (1965). Commentary: On Defleur and Westie's attitude as a scientific concept. *Social Forces*, 43, 422-425.
- Whyte, G. (1999). Quantitating donor behaviour to model the effect of changes in donor management on sufficiency in the blood service. *Vox Sanguinis*, 76(4), 209-215.
- Wicker, A. W. (1969). Attitudes versus actions: The relationship of verbal and overt behavioural responses to attitude objects. *Journal of Social Issues*, 25(4), 41-78.
- Wiesenthal, D. L., & Spindel, L. (1989). The effect of telephone messages/prompts on return rates of first-time blood donors. *Journal of Community Psychology*, 17(April), 194-197.
- Wiwanitkit, V. (2002). Knowledge about blood donation among a sample of Thai university students. *Vox Sanguinis*, 83(2), 97-99.
- Wright, M., & Klyn, B. (1998). Environmental attitude - behaviour correlations in 21 countries. *Journal of Empirical Generalisations in Marketing Science*, 3, 42-60.
- Zaltman, G., & Bonoma, T. V. (1979). The lack of heresy in marketing. In S. W. Brown & R. P. Fisk (Eds.), *Marketing theory: Distinguished contributions* (1984, pp. 329-335). USA: John Wiley & Sons.
- Zuckerman, M., & Reis, H. T. (1978). Comparison of three models for predicting altruistic behavior. *Journal of Personality and Social Psychology*, 36(5), 498-510.

## **APPENDICES**

**APPENDIX A: MANAWATU BLOOD DONOR  
ANALYSIS**

The tables below present analyses of blood donors in the Manawatu region, based on 1999 data obtained from the New Zealand Blood Service.

### Donor Characteristics - Gender

	n	%
<b>Female</b>	4115	52.5
<b>Male</b>	3713	47.5
<b>Total</b>	7828	100.0

### Donor Characteristics - Age

	Female	%	Male	%	Total	%
<b>&lt; 20 Yrs</b>	481	12.0	394	10.5	875	11.0
<b>20-29 Yrs</b>	975	24.0	761	20.5	1736	22.0
<b>30-39 Yrs</b>	767	18.5	695	19.0	1462	19.0
<b>40-49 Yrs</b>	935	22.5	856	23.0	1791	23.0
<b>50-59 Yrs</b>	631	15.0	658	18.0	1289	16.5
<b>60-69 Yrs</b>	276	7.0	279	7.0	555	7.0
<b>70 + Yrs</b>	50	1.0	70	2.0	120	1.5
	4115	100.0	3713	100.0	7828	100.0

### Donation Experience - Gender

	Female	%	Male	%	Total	%
<b>&lt; 3 Years</b>	1850	45	1581	42	3431	44
<b>3-5 Years</b>	410	10	288	8	698	9
<b>6-10 Years</b>	717	17	519	14	1236	16
<b>&gt; 10 Years</b>	1138	28	1325	36	2463	31
	4115	100	3713	100	7828	100

### Donation Experience - Age

	<3Yrs	%	3-5Yrs	%	6-10Yrs	%	>10Yrs	%
<b>&lt; 20 Yrs</b>	865	25	8	1	0	0	0	0
<b>20-29 Yrs</b>	994	29	244	35	337	27	163	6
<b>30-39 Yrs</b>	634	19	148	21	267	22	413	17
<b>40-49 Yrs</b>	561	16	145	21	328	26.5	757	31
<b>50-59 Yrs</b>	283	8	109	16	217	17.5	680	28
<b>60-69 Yrs</b>	89	3	34	5	73	6	359	14
<b>70 + Yrs</b>	5	0	10	1	14	1	91	4
	3431	100	698	100	1236	100	2463	100

## Donor Characteristics - Donation Venue

	<b>n</b>	<b>%</b>
<b>Mobile Sites<sup>15</sup></b>	5249	67
<b>Main Centre</b>	2579	33
<b>Total</b>	7828	100

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<sup>15</sup> The Manawatu Blood Centre visits 56 Mobile Sites.

## **APPENDIX B: TPB ELICITATION PROCESS**

## BLOOD DONATION

This is a brief questionnaire about Blood Donation. The research is being carried out as part of a PhD study in the Department of Marketing.

What reasons can you think of for people donating blood when the NZ Blood Service comes to the campus?

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What reasons can you think of for people *not* donating blood when the NZ Blood Service comes to the campus?

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Is there anything else you personally associate with donating blood when the NZ Blood Service comes to the campus?

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Which individuals or groups think you or others *should* donate blood when the NZ Blood Service comes to the campus?

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Which individuals or groups think you or others *should not* donate blood when the NZ Blood Service comes to the campus?

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Are there any other individuals or groups who come to mind when you think about donating blood when the NZ Blood Service comes to the campus?

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What factors or circumstances would make it easier for you or other people to donate blood when the NZ Blood Service comes to the campus?

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What factors or circumstances would make it more difficult for you or other people to donate blood when the NZ Blood Service comes to the campus?

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Are there any other issues that come to mind about donating blood when the NZ Blood Service comes to the campus?

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## Verbatim Responses to the TPB Pre-Pilot Questionnaire

### Reasons for donating blood

- Helps other people/ saves lives e.g. accident victims
- Social responsibility/ duty/ obligation
- It is convenient
- There is no excuse not to/ doesn't cost anything except some time
- Might need blood yourself one day
- Someone you know may have needed donated blood in the past
- Altruism/ civic virtue/ community service/ to feel good about yourself
- So blood is available when needed
- Social interaction
- To get out of work/ lectures
- To receive tea and biscuits
- Know someone else who is going to donate

### Reasons for not donating blood

- Sometimes painful
- Fear of needles and associated pain
- Fear of nausea
- Fear of needle contamination
- Fear of sight of blood
- Subconscious fears of health risks
- Fear of finding out own health status
- Takes up time/ too busy/ inconvenient
- Have to remember to go/ just forget to donate
- Away from campus on collection days
- Difficulty with the process e.g. small veins
- Known medical reasons e.g., anaemia, on medication, pregnancy, lactation, sickness, don't weigh enough, past reactions
- Not knowing what blood is used for
- Don't think I'll ever need it myself
- Uncertainty about eligibility to donate
- Fear of fainting/ fear of looking foolish
- Not aware of Blood Service presence
- Not aware of shortage of blood donors
- Get nothing tangible for doing it
- Insufficient warning
- Religious/ cultural reasons

## **Personal associations with donating blood**

- Tea and biscuits
- Pleasant and efficient staff
- Inefficient database – have to fill out same form each time
- Regular donors are treated like first timers
- Big vans blocking access
- Posters and advertising flyers
- Feelings of guilt over not donating
- Stickers on donors
- Knowledge of donor shortage

## **Individuals or groups who think you should donate**

- Blood transfusion service
- Medical researchers
- Wife/ spouse/ partner
- Hospital staff
- Healthcare people
- People who have received blood
- Friends who are donating

## **Individuals or groups who think you should not donate**

- People who are ignorant
- Some religious groups

## **Individuals or groups you associate with blood donation**

- Accident victims/ blood transfusion recipients
- The wrong types of people who donate e.g. those seeking medical check up for HIV
- Haemophiliacs
- Medical professionals

## **Factors or circumstances that would make it easier to donate blood**

- Being able to donate in your own office
- Earlier or later times/ more collection days
- Quicker processing
- Effective advertising/ wide communication/ reminders
- Making venue easier to find/ more obvious location/ having central location
- Sharper needles
- Rewards/ incentives
- Good awareness of times and dates
- Good employment culture
- More information about what blood is used for/ who can donate

## **Factors or circumstances that make it more difficult to donate blood**

- Short hours of collection times
- Long queues
- Insufficient or poor advertising
- Notified too early
- Associated pain
- Health problems/ small veins
- Exam time/ timing of visit
- Not knowing where to go
- Not knowing when to donate
- Cultural issues

## **Other issues that come to mind about donating blood**

- Suspicion about where blood goes
- Lack of knowledge about the donation process/ what happens to the blood/ who can and cannot donate
- Shortage of donors
- Understanding the need for donation

## **APPENDIX C: INTERVIEWERS' INSTRUCTIONS**

**Massey University**  
**DEPARTMENT OF MARKETING**

**GENERAL INTERVIEWING NOTES**

**Introduction**

The Department of Marketing is undertaking market research to ascertain information about Blood Donation behaviour.

As part of the project we would like to interview people who are eligible to donate blood within four weeks of the interview date. To do this we will be undertaking intercept surveys at various campus locations. Each interview should take approximately 15 minutes.

**Interviewing**

First impressions are crucial. Introducing yourself and persuading the respondent to give the interview are probably the most critical and difficult parts of the interview. Your job is more than just conducting interviews; it is selling people on being interviewed when there might be some resistance. Most resistance is due to two reasons:

- **Misunderstanding:** People think that this is not really a survey or they may suspect that it's a sales pitch.
- **Can't be bothered:** People are too busy, or they see it as an invasion of their privacy.

You need to be able to overcome these objections by convincing the respondent that:

- You are interviewing for a legitimate and reputable organisation.
- You are engaged in important and worthwhile research.
- The respondent's participation is vital to the success of the project.

At the start, you need to explain who you are, and what the nature of the research is (this is written for you on the questionnaire). Please make sure you are familiar with it.

It is vitally important that you start your introduction in an interesting and confident manner so that it does not sound like a tired and dreary recital. Your approach to a respondent is often the deciding factor in whether or not the interview will proceed.

When you ask respondents questions, it is vitally important that you use the exact words printed in the questionnaire as even minor and apparently trivial changes can affect respondents' perceptions of what they are being asked, and so may affect responses. It is also important that you ask all questions in a neutral and straightforward way. Any cues from your speech or body language may be picked up by the respondent and affect the successful outcome of the survey.

If a respondent appears to have misunderstood a question, first repeat it slowly. ***DO NOT TRY TO EXPLAIN IT IN DIFFERENT WORDS, AS THIS MAY BIAS HIS OR HER RESPONSE.***

If a respondent does not appear to be taking the interview seriously, it is best to remind the person that the survey is serious and attempt to maintain his or her cooperation. However, if you feel that the respondent has not been giving you helpful or truthful answers, please make a note of this on the questionnaire.

Remember, as an interviewer, you are the link between me (the researcher) and the respondents. The quality of the final results depends on your ability to elicit the information needed from the respondents.

### **Recording**

For every person contacted, complete a Contact Record Sheet, indicating whether the respondent refused or was not eligible to proceed with the interview, and whether the survey was completed or left incomplete.

Accept all refusals cheerfully and above all remember to leave a positive impression of Massey University, whether or not the person takes part in the interview.

### **Interview Conclusion**

Before terminating the interview, attempt to obtain the respondent's name and contact details (this is written for you on the questionnaire) and ensure this information is recorded accurately. Your manner throughout the interview will help gain respondents' consent to be contacted later. At all times make sure you sound friendly, courteous and professional. However, do not suggest to respondent that they are under any obligation to take part in further questioning.

**Massey University**  
**DEPARTMENT OF MARKETING**

**SPECIFIC INTERVIEWING NOTES**

- For each respondent, please ensure that Part A and Part B of the questionnaire have the **SAME** ID number. This is vitally important.
- Please initial each completed questionnaire in the space provided on Part A.
- If a respondent seeks details of the survey organiser you should provide the following details: Judith Holdershaw, Department of Marketing, Massey University, phone 06 350 5590, or email [J.Holdershaw@massey.ac.nz](mailto:J.Holdershaw@massey.ac.nz)
- Questions 8-13 are a series of open-ended questions. For coding purposes it is important that you attempt to obtain information that is as specific as the respondent is able to be. For example, for question 8, a specific answer would be something like 10% or 20%. If the respondent answers, for example, between 10% - 20%, encourage the respondent to be more specific, **but don't suggest a figure.**
- Question 11. If the respondent is unable to give a measurement in mls, write in the quantity in the measurement offered but ensure that this is noted on the questionnaire. For example, if the respondent can only offer a quantity measured in pints, accept this answer and write in the measurement term used.
- Question 12. Again, attempt to obtain specific answers by probing for more details. For example, if the respondent gives an answer such as 'illness' probe this reason further. Can he or she specify any particular type of 'illnesses'? Similarly, if a respondent gives an answer such as 'overseas travel', ask if he or she can be more specific in terms of countries visited or reasons why overseas travel may make a donor ineligible to donate. It is important that you probe respondents for more details, however, do not guide respondents' answers in any way.
- Survey Part B. This part of the survey includes a series of questions that have been written a particular way for the purpose of the survey, and are to be self-completed by the respondent. Please remain with the respondent during this time. If respondents attempt to skip some questions because they feel these questions seem repetitive, or query the perceived awkwardness of some questions, it is vital that you encourage them to answer all the questions as presented. Explain that each question is important to the outcome of the survey and that their cooperation with answering all questions would be most appreciated.

When the respondent has completed Part B of the survey, please check that every question has been answered and that the scales are clearly circled. If necessary, query whether the respondent has intentionally refused to answer the question, as opposed to simply overlooking it. In particular, ensure that only

one number per scale has been circled, and only the numbers and not the adjectives at the ends of the scales have been circled.

- At the completion of the survey please attempt to obtain the respondent's contact details. Attempting to obtain the respondent's cooperation with being contacted again at a later date is an important aspect of the interview process. If the respondent queries what this information is needed for, please reiterate that the purpose of the survey is to collect information for a PhD study and the information will remain strictly confidential to the survey organiser. Explain that the survey organiser has requested contact details in case she wishes to clarify any aspects of the information obtained.

Follow the questionnaire script provided to ask the respondent if he or she is willing to be contacted again. If agreement is given immediately, proceed to obtain the respondent's details. If the respondent hesitates, read the next part of the script that provides further assurances about confidentiality. If the respondent agrees to provide contact details, try to obtain an email address where available, and phone number also. Please ensure that these details are correctly recorded. As you know, an incorrectly recorded email address, or phone number, is no more useful than obtaining no contact details at all!

## INTERCEPT CONTACT RECORD SHEET

INTERVIEWER.....

LOCATION.....

DAY AND DATE.....

Time	Refusals	Non Qualify	Incomplete Survey	Complete Survey
9-10	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1 2 3	1 2 3
10-11	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1 2 3	1 2 3
11-12	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1 2 3	1 2 3
12-1	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1 2 3	1 2 3
1-2	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1 2 3	1 2 3
2-3	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1 2 3	1 2 3
3-4	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1 2 3	1 2 3
4-5	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	1 2 3	1 2 3

**TOTALS**

REFUSALS.....

NON QUALIFIERS.....

INCOMPLETE SURVEYS.....

COMPLETED SURVEYS.....

**TOTAL CONTACTS**.....

## **APPENDIX D: SURVEY QUESTIONNAIRES**

## PILOT STUDY QUESTIONNAIRE

- Pilot study – yellow cover page (presented to all respondents)
- Pilot study - pink version (presented to respondents who had *never* donated, or attempted to donate, blood)
- Pilot study – blue version (presented to respondents who had *ever* donated, or attempted to donate, blood).
- Juster scale showcard

**MASSEY UNIVERSITY, DEPARTMENT OF MARKETING, 2001  
BLOOD DONATION SURVEY**

"Hello, my name is \_\_\_\_\_ I'm conducting a survey about Blood Donation. This research is being carried out as part of a PhD study in the Department of Marketing. It'll take about 15 minutes and I would be very grateful if you were able to help me. Are you willing to take part in this survey?"

1. Have you personally ever donated, or ever attempted to donate, blood?

- Yes
- No

2. Are you aware that the New Zealand Blood Service will visit the campus next week?

- Yes
- No

*"Now I'd like you to look at this scale please."*

**GIVE RESPONDENT JUSTER SCALE SHOWCARD**

"This scale describes a series of chances that you might do something and it works like this. If I asked you what are the chances of you doing an activity next week, and you were practically certain that you would do this, you would answer 10. On the other hand, if you think that there is no chance that you would do this activity, the best answer would be 0. If you are uncertain, you'd choose another number as close to "0" or "10" as you think it should be.

Now, looking at this scale, and thinking about blood donation, please tell me what chance there is that you personally will donate blood when the New Zealand Blood Service visits the campus next week."

**RECORD JUSTER SCALE PROBABILITY \_\_\_\_\_ / 10**

*"Now, could you please fill out Part A and Part B of this survey on your own."*

**RECORD ID NO. ON QUESTIONNAIRE BEFORE GIVING IT TO RESPONDENT**

*Hand respondent Blood Donation Survey and PLEASE NOTE CAREFULLY:*

- Respondents who answer "YES" to Q1, to complete "BLUE" survey
- Respondents who answer "NO" to Q1, to complete "PINK" survey

*"Please follow the instructions given to help you answer the questions. If you are unsure about any of the instructions on how to answer the questions, please ask an interviewer for help."*

**PLEASE ENSURE THAT THE SAME ID NO. IS RECORDED ON BOTH PARTS OF THE SURVEY.**

## BLOOD DONATION SURVEY - PART A

This research is being carried out as part of a PhD study in the Department of Marketing. Please feel assured that this survey is confidential to the survey organiser: Judith Holdershaw, Department of Marketing, Massey University, (06) 350 5590. If you should come to any question you don't want to answer, please go on to the next question.

**PLEASE TICK THE CIRCLE BESIDE THE ANSWER THAT BEST APPLIES, OR WRITE IN THE SPACE PROVIDED.**

1. For what reasons have you NEVER donated, or never attempted to donate, blood?  
Please select your answers from the list below. Tick as many reasons as apply

- I think it might be painful or unpleasant
- I don't like having a needle put into my arm
- I'm too busy
- I've never thought about it
- I've never been asked
- I don't think I qualify as a blood donor
- Health reasons prevent me from donating blood
- I might become infected by the needle
- I don't know where to go
- I don't know enough about it
- Blood collection times are not convenient
- Blood collection locations are not convenient
- Other donors have put me off donating
- Other ... (Please specify below)

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2. And looking again at the list below, what is the MAIN reason why you have never donated, or never attempted to donate, blood?  
Please tick one box only

- I think it might be painful or unpleasant
- I don't like having a needle put into my arm
- I'm too busy
- I've never thought about it
- I've never been asked
- I don't think I qualify as a blood donor
- Health reasons prevent me from donating blood
- I might become infected by the needle
- I don't know where to go
- I don't know enough about it
- Blood collection times are not convenient
- Blood collection locations are not convenient
- Other donors have put me off donating
- Other ... (Please specify below)

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## BLOOD DONATION SURVEY - PART B

1. Have you, yourself, ever received donated blood or blood products?

- Yes
- No
- Not sure

2. Do you know someone else who has ever received donated blood or blood products?

- Yes
- No
- Not sure

3. Has a member of your family ever donated blood?

- Yes
- No
- Not sure

4. Have any of your friends ever donated blood?

- Yes
- No
- Not sure

5. Does your NZ driver's licence identify you as a potential organ donor?

- Yes
- No
- Don't know
- I don't hold a NZ driver's licence

6. Approximately, how much money do you donate to charitable organisations each year?

- None
- Less than \$100
- \$100-\$200
- \$201- \$500
- \$501-\$1000
- Over \$1000

7. What is your blood group?

- O+
- O-
- A+
- A-
- B+
- B-
- AB+
- AB-
- Not Sure



Now I'd like you to answer some questions that relate to your feelings and beliefs about blood donation. For each question, please circle the number that BEST describes your feeling or belief.

Please circle ONE number only on EVERY scale.

15. I want to donate blood when the New Zealand Blood Service comes to the campus next week.  
 unlikely 1 | 2 | 3 | 4 | 5 | 6 | 7 likely  
 extremely quite slightly neither slightly quite extremely
16. For me, donating blood when the New Zealand Blood Service comes to the campus next week is:  
 unrewarding 1 | 2 | 3 | 4 | 5 | 6 | 7 rewarding  
 extremely quite slightly neither slightly quite extremely
17. Most people who are important to me think that I should donate blood when the New Zealand Blood Service comes to the campus next week.  
 unlikely 1 | 2 | 3 | 4 | 5 | 6 | 7 likely  
 extremely quite slightly neither slightly quite extremely
18. For me, donating blood when the New Zealand Blood Service comes to the campus next week is:  
 difficult 1 | 2 | 3 | 4 | 5 | 6 | 7 easy  
 extremely quite slightly neither slightly quite extremely
19. I personally feel I have a moral obligation to donate blood when the New Zealand Blood Service comes to the campus next week.  
 unlikely 1 | 2 | 3 | 4 | 5 | 6 | 7 likely  
 extremely quite slightly neither slightly quite extremely
20. The people in my life whom I value think that I should donate blood when the New Zealand Blood Service comes to the campus next week.  
 unlikely 1 | 2 | 3 | 4 | 5 | 6 | 7 likely  
 extremely quite slightly neither slightly quite extremely
21. If I wanted to, I could easily donate blood when the New Zealand Blood Service comes to the campus next week.  
 unlikely 1 | 2 | 3 | 4 | 5 | 6 | 7 likely  
 extremely quite slightly neither slightly quite extremely
22. Helping save lives is:  
 good 1 | 2 | 3 | 4 | 5 | 6 | 7 bad  
 extremely quite slightly neither slightly quite extremely
23. Undergoing a medical experience is:  
 good 1 | 2 | 3 | 4 | 5 | 6 | 7 bad  
 extremely quite slightly neither slightly quite extremely

24. Fulfilling a social responsibility is:

good 7 | 6 | 5 | 4 | 3 | 2 | 1 bad  
extremely quite slightly neither slightly quite extremely

25. Interacting socially with like-minded people is:

good 7 | 6 | 5 | 4 | 3 | 2 | 1 bad  
extremely quite slightly neither slightly quite extremely

26. Losing time from work or study is:

good 7 | 6 | 5 | 4 | 3 | 2 | 1 bad  
extremely quite slightly neither slightly quite extremely

27. Feeling faint or dizzy is:

good 7 | 6 | 5 | 4 | 3 | 2 | 1 bad  
extremely quite slightly neither slightly quite extremely

28. Feeling anxious is:

good 7 | 6 | 5 | 4 | 3 | 2 | 1 bad  
extremely quite slightly neither slightly quite extremely

29. I want to do what my friends or colleagues think I should do.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

30. I want to do what my family thinks I should do.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

31. I want to do what those in need of blood transfusions think I should do.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

32. I can easily find out where on campus the NZ Blood Service is located.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

33. I can easily find out when the New Zealand Blood Service is coming to the campus.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

34. I will have spare time available to donate blood when the New Zealand Blood Service comes to the campus next week.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

35. I meet all the criteria to be a blood donor.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

36. If I donate blood when the New Zealand Blood Service comes to the campus next week, I will help save lives.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

37. If I donate blood when the New Zealand Blood Service comes to the campus next week, I will undergo a painful experience.  
likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely
38. If I donate blood when the New Zealand Blood Service comes to the campus next week, I will fulfill a social responsibility.  
likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely
39. If I donate blood when the New Zealand Blood Service comes to the campus next week, I will interact with like-minded people.  
likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely
40. If I donate blood when the New Zealand Blood Service comes to the campus next week, I will lose time from work or study.  
likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely
41. If I donate blood when the New Zealand Blood Service comes to the campus next week, I may feel faint or dizzy.  
likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely
42. If I donate blood when the New Zealand Blood Service comes to the campus next week, I may feel anxious.  
likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely
43. My friends or colleagues think I should donate blood when the New Zealand Blood Service comes to the campus next week.  
likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely
44. My family thinks I should donate blood when the New Zealand Blood Service comes to the campus next week.  
likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely
45. There is need of blood transfusions think I should donate blood when the New Zealand Blood Service comes to campus next week.  
likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely
46. I can donate blood more easily if I know where on campus the New Zealand Blood Service is located.  
likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely
47. I can donate blood more easily if I know when the New Zealand Blood Service is coming to the campus.  
likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely
48. I can donate blood when the New Zealand Blood Service comes to the campus more easily if I have spare time available.  
likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

48. I can donate blood when the New Zealand Blood Service comes to the campus more easily if I meet all the criteria to be a blood donor.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

49. I will donate blood when the New Zealand Blood Service comes to the campus next week.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

The following questions are about you, just so I can be sure that I have a good cross-section of people in my sample.

51. Please indicate the year in which you were born:

Year: 19 \_\_\_\_\_

52. Which category BEST describes your highest education qualification?

- No formal qualification
- School qualifications only (Proficiency, School C, UE, Bursary)
- Trade or professional certificate
- Some tertiary education
- Completed Diploma or Bachelor's degree
- Post-graduate qualification

53. Which of these categories BEST describe your ethnic background?

(Please tick all that apply)

- Asian
- European/Pakeha
- Maori
- Pacific Island
- Other

54. Which category BEST describes you of the youngest?

- No children
- Youngest child under 5
- Youngest child between 5-13
- Youngest child 14 or older
- Youngest child no longer living at home

55. Which category BEST describes your current employment status?

- Student - full time (35+ hours weekly)
- Student - part time (15-34 hours weekly)
- Employed - fulltime (35+ hours weekly)
- Employed - part time (15-34 hours weekly)
- Employed - less than 15 hours/temporarily out of work
- Helping family member
- Unemployed or beneficiary
- Retired
- Housewife/husband - home duties
- Permanently disabled
- Other (Please specify) \_\_\_\_\_

PLEASE TURN THE PAGE



### BLOOD DONATION SURVEY - PART A

This research is being carried out as part of a PhD study in the Department of Marketing. Please feel assured that this survey is confidential to the survey organiser: Judith Holdershaw, Department of Marketing, Massey University, (06) 350 5590. If you should come to any question you don't want to answer, please go on to the next question.

PLEASE TICK THE CIRCLE BESIDE THE ANSWER THAT BEST APPLIES, OR WRITE IN THE SPACE PROVIDED.

1. Which category BEST describes you?

- I have attempted to donate blood but was unable to do so
- I have donated blood in the past but am no longer a blood donor
- I donate blood sometimes (not more than twice a year)
- I am a regular blood donor (3-4 times per year)

2. Approximately, how many times have you ever donated blood, or ever attempted to donate, blood?

- 1
- 2
- 3-4
- 5-8
- 9 or more

3. For what reasons did you donate, or attempt to donate blood, for the FIRST time?

Please select your answers from the list below. Tick as many reasons as apply

- I was encouraged by a family member to give blood
- I was encouraged by a friend or colleague to give blood
- I saw a newspaper request to give blood
- I heard a radio request to give blood
- I saw a public notice request to give blood
- I was encouraged by a NZ Blood Service public notice or talk
- I wanted to get time off work or lectures or study
- I wanted a medical check up
- I wanted to find out my blood group
- I know my blood type is rare
- I wanted to do something for the community
- I have needed donated blood myself
- I know someone else who has needed donated blood
- Other... (please specify below)

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4. And looking again at the list below, what is the MAIN reason why you donated, or attempted to donate blood, for the FIRST time?

Please tick one box only

- I was encouraged by a family member to give blood
- I was encouraged by a friend or colleague to give blood
- I saw a newspaper request to give blood
- I heard a radio request to give blood
- I saw a public notice request to give blood
- I was encouraged by a NZ Blood Service public notice or talk
- I wanted to get time off work or lectures or study
- I wanted a medical check up
- I wanted to find out my blood group
- I know my blood type is rare
- I wanted to do something for the community
- I have needed donated blood myself
- I know someone else who has needed donated blood
- Other... (Please specify below)

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5. How old were you when you FIRST donated, or first attempted to donate, blood?

- Under 20
- 20-29
- 30-39
- 40-49
- 50-59
- 60+

6. When you made your FIRST donation, or first attempted donation, did someone go with you or did you go on your own?

- Someone went with me
- I went on my own

7. Thinking now about the LAST time you donated, or last attempted to donate, blood which category best describes your motivation to donate blood?

- I was mostly self-motivated to donate blood
- I was mostly motivated by someone I know to donate blood
- I was mostly motivated by blood donor advertising or public notices to donate blood
- I was mostly motivated by a personal letter or phone call from the NZ Blood Service

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8. Which category best describes when you LAST donated, or last attempted to donate, blood?

- Within the last 3 months
  - Within the last 6 months
  - Within the last 12 months
  - More than 12 months ago
- (Go to Question 1 on next page)  
→ (Go to question 9)

9. As a previous donor, for what reasons have you not donated, or not attempted to donate, blood within the last 12 months?

Please select your answers from the list below. Tick as many reasons as apply

- I found previous donations too painful
- I fainted or suffered a negative reaction during my last donation
- It takes up too much of my time to donate blood
- Blood collection hours are too inconvenient
- I'm too busy
- I don't like the NZ Blood Service staff
- I don't like being asked personal questions prior to donating
- I did not qualify to donate blood on my last attempt
- I am no longer eligible to donate blood
- Other... (Please specify below)

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10. And looking again at the list below, what is the MAIN reason why you have not donated, or not attempted to donate, blood within the last 12 months?

Please tick one box only

- I found previous donations too painful
- I fainted or suffered a negative reaction during my last donation
- It takes up too much of my time to donate blood
- Blood collection hours are too inconvenient
- I'm too busy
- I don't like the NZ Blood Service staff
- I don't like being asked personal questions prior to donating
- I did not qualify to donate blood on my last attempt
- I am no longer eligible to donate blood
- Other... (Please specify below)

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PLEASE TURN THE PAGE AND ANSWER THE QUESTIONS IN PART B

## BLOOD DONATION SURVEY - PART B

1. Have you, yourself, ever received donated blood or blood products?

- Yes
- No
- Not sure

2. Do you know someone else who has ever received donated blood or blood products?

- Yes
- No
- Not sure

3. Has a member of your family ever donated blood?

- Yes
- No
- Not sure

4. Have any of your friends ever donated blood?

- Yes
- No
- Not sure

5. Does your NZ driver's licence identify you as a potential organ donor?

- Yes
- No
- Don't know
- I don't hold a NZ driver's licence

6. Approximately, how much money do you donate to charitable organisations each year?

- None
- Less than \$100
- \$100-\$200
- \$201-\$500
- \$501-\$1000
- Over \$1000

7. What is your blood group?

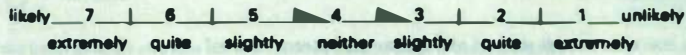
- O+
- O-
- A+
- A-
- B+
- B-
- AB+
- AB-
- Not Sure



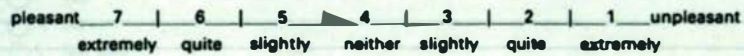
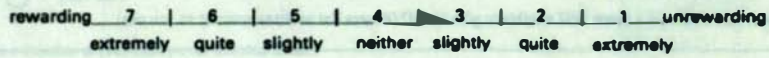
Now I'd like you to answer some questions that relate to your feelings and beliefs about blood donation. For each question, please circle the number that BEST describes your feeling or belief.

Please circle ONE number only on EVERY scale.

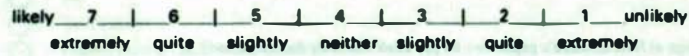
15. I intend to donate blood when the New Zealand Blood Service comes to the campus next week.



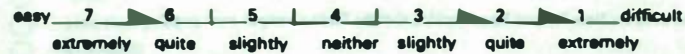
16. For me, donating blood when the New Zealand Blood Service comes to the campus next week is:



17. Most people who are important to me think that I should donate blood when the New Zealand Blood Service comes to the campus next week.



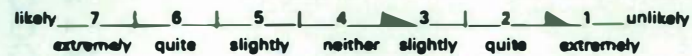
18. For me, donating blood when the New Zealand Blood Service comes to the campus next week is:



19. I personally feel I have a moral obligation to donate blood when the New Zealand Blood Service comes to the campus next week.



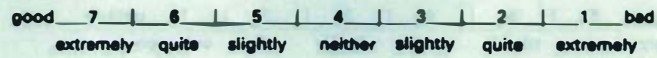
20. The people in my life whose opinions I value think that I should donate blood when the New Zealand Blood Service comes to the campus next week.



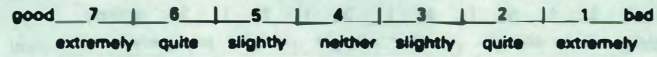
21. If I wanted to, I could easily donate blood when the New Zealand Blood Service comes to the campus next week.



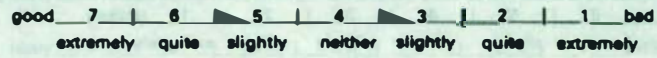
22. Helping save lives is:



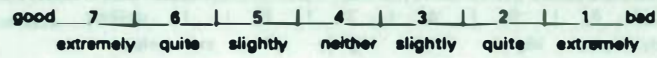
23. Undergoing a painful experience is:



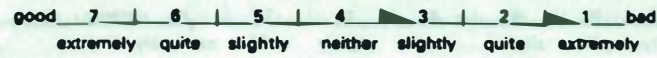
24. Fulfilling a social responsibility is:



25. Interacting socially with like-minded people is:



26. Losing time from work or study is:



27. Feeling faint or dizzy is:



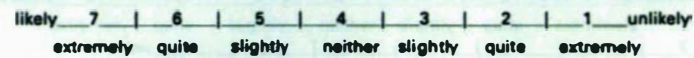
28. Feeling anxious is:



29. I want to do what my friends or colleagues think I should do.



30. I want to do what my family thinks I should do.



31. I want to do what those in need of blood transfusions think I should do.



12. I can easily find out where on campus the NZ Blood Service is located.
- likely 7 | 6 | 5 | 4 | 3 | 2 | 1 | unlikely  
 extremely quite slightly neither slightly quite extremely
13. I can easily find out where the New Zealand Blood Service is coming to the campus.
- likely 7 | 6 | 5 | 4 | 3 | 2 | 1 | unlikely  
 extremely quite slightly neither slightly quite extremely
14. I will have spare time available to donate blood when the New Zealand Blood Service comes to the campus next week.
- likely 7 | 6 | 5 | 4 | 3 | 2 | 1 | unlikely  
 extremely quite slightly neither slightly quite extremely
15. I meet all the criteria to be a blood donor.
- likely 7 | 6 | 5 | 4 | 3 | 2 | 1 | unlikely  
 extremely quite slightly neither slightly quite extremely
16. If I donate blood when the New Zealand Blood Service comes to the campus next week, I will help save lives.
- likely 7 | 6 | 5 | 4 | 3 | 2 | 1 | unlikely  
 extremely quite slightly neither slightly quite extremely
17. If I donate blood when the New Zealand Blood Service comes to the campus next week, I will undergo a painful experience.
- likely 7 | 6 | 5 | 4 | 3 | 2 | 1 | unlikely  
 extremely quite slightly neither slightly quite extremely
18. If I donate blood when the New Zealand Blood Service comes to the campus next week, I will fulfil a social responsibility.
- likely 7 | 6 | 5 | 4 | 3 | 2 | 1 | unlikely  
 extremely quite slightly neither slightly quite extremely
19. If I donate blood when the New Zealand Blood Service comes to the campus next week, I will learn something.
- likely 7 | 6 | 5 | 4 | 3 | 2 | 1 | unlikely  
 extremely quite slightly neither slightly quite extremely
20. If I donate blood when the New Zealand Blood Service comes to the campus next week, I will lose time from work or study.
- likely 7 | 6 | 5 | 4 | 3 | 2 | 1 | unlikely  
 extremely quite slightly neither slightly quite extremely
21. If I donate blood when the New Zealand Blood Service comes to the campus next week, I may feel faint or dizzy.
- likely 7 | 6 | 5 | 4 | 3 | 2 | 1 | unlikely  
 extremely quite slightly neither slightly quite extremely

42. If I donate blood when the New Zealand Blood Service comes to the campus next week, I may feel anxious.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

43. My friends or colleagues think I should donate blood when the New Zealand Blood Service comes to the campus next week.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

44. My family thinks I should donate blood when the New Zealand Blood Service comes to the campus next week.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

45. Those in need of blood transfusions think I should donate blood when the New Zealand Blood Service comes to campus next week.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

46. I can donate blood more easily if I know where on campus the New Zealand Blood Service is located.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

47. I can donate blood more easily if I know when the New Zealand Blood Service is coming to the campus.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

48. I can donate blood when the New Zealand Blood Service comes to the campus more easily if I have spare time available.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

49. I can donate blood when the New Zealand Blood Service comes to the campus more easily if I meet all the criteria to be a blood donor.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

50. I will donate blood when the New Zealand Blood Service comes to the campus next week.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

The following questions are about you, just so I can be sure that I have a good cross-section of people in my sample.

81. Please indicate the year in which you were born:

Year: 19 \_\_\_\_\_

82. Which category BEST describes your highest educational qualification?

- No formal qualification
- School qualifications only (Proficiency, School C, UE, Bursary)
- Trade or professional certificate
- Some tertiary education
- Completed Diploma or Bachelor's degree
- Post-graduate qualification

83. Which of these categories BEST describes your ethnic background?

(Please tick all that apply)

- Asian
- European/Pakeha
- Maori
- Pacific Island
- Other

84. Which category BEST describes you at the moment?

- No children
- Youngest child under 5
- Youngest child between 5-13
- Youngest child 14 or older
- Youngest child no longer living at home

85. Which category BEST describes your current employment status?

- Student - full time (35+ hours weekly)
- Student - part time (15-34 hours weekly)
- Employed - fulltime (35+ hours weekly)
- Employed - part time (15-34 hours weekly)
- Employed - less than 15 hours/temporarily out of work
- Helping family member
- Unemployed or beneficiary
- Retired
- Housewife/husband - home duties
- Permanently disabled
- Other (Please specify)

86. What is your sex?

- Female
- Male

87. In which year did you first become a student or staff member at the Tertiary campus?



## JUSTER SCALE

—	—	10	Certain, Practically Certain (99 in 100)
—	—	9	Almost Sure (9 in 10)
—	—	8	Very Probable (8 in 10)
—	—	7	Probable (7 in 10)
—	—	6	Good Possibility (6 in 10)
—	—	5	Fairly Good Possibility (5 in 10)
—	—	4	Fair Possibility (4 in 10)
—	—	3	Some Possibility (3 in 10)
—	—	2	Slight Possibility (2 in 10)
—	—	1	Very Slight Possibility (1 in 10)
—	—	0	No Chance, Almost No Chance (1 in 100)

## MAJOR STUDY QUESTIONNAIRE

- Part A
- Part B
- Showcards

**MASSEY UNIVERSITY**  
**Department of Marketing**

**BLOOD DONATION SURVEY**

Hello, my name is \_\_\_\_\_. I'm conducting a survey about Blood Donation and I'd like to talk to people who are eligible to donate blood. To the best of your knowledge, could you make a donation of blood within the next four weeks if you wanted to?

If **YES** please read:

*Are you willing to complete a survey which will take approximately 15 minutes of your time?*

If **YES**, please read Statement of Confidentiality:

Before we start, I want to assure you that this survey is confidential and completely voluntary. If I should come to any question you don't want to answer, please let me know and I'll go on to the next question.

MASSEY UNIVERSITY  
DEPARTMENT OF MARKETING

ID \_\_\_\_\_

LOCATION \_\_\_\_\_

INTERVIEWER \_\_\_\_\_

**BLOOD DONATION SURVEY – PART A  
2002**

First, I'd like to ask you some questions about your blood donation experience.

**Hand Respondent SHOWCARD 1**

1. Please look at this showcard and tell me which category best describes you?

*Circle ONE Only*

- I have never donated, or never attempted to donate, blood ..... 1 **GO TO Q4**
- I have attempted to donate blood but was unable to do so ..... 2
- I have donated blood before but am no longer a blood donor ..... 3
- I donate blood occasionally but not more than twice a year ..... 4
- I am a regular blood donor who donates 3 to 4 times per year ..... 5

**Hand Respondent SHOWCARD 2**

2. Looking at this showcard, which category best describes when you last donated, or attempted to donate, blood?

*Circle ONE only*

- Within the last 3 months ..... 1
- Within the last 6 months ..... 2
- Within the last 12 months ..... 3
- More than 12 months ago ..... 4

3. Approximately, how many times have you ever donated blood, or attempted to donate blood? **Do Not Prompt.**

*Circle ONE only*

- 1 ..... 1
- 2 ..... 2
- 3-5 ..... 3
- 6-8 ..... 4
- 9 or more ..... 5

4. Have you, yourself, or someone else you know, ever received donated blood or blood products?

**Circle ONE only**

- Yes ..... 1
- No ..... 2
- Not sure ..... 3

5. Has a member of your family ever donated blood?

**Circle ONE only**

- Yes ..... 1
- No ..... 2
- Not sure ..... 3

6. Has someone else you know ever donated blood?

**Circle ONE only**

- Yes ..... 1
- No ..... 2
- Not sure ..... 3

7. Does your NZ driver's licence identify you as a potential organ donor?

**Circle ONE only**

- Yes ..... 1
- No ..... 2
- Not sure ..... 3
- I don't have a NZ driver's licence ..... 4

**READ OUT**

Now I'd like to ask you some general knowledge questions about blood donation. If you don't know the answer to any of these questions, please give me your best guess at what you think the answer is.

**Probe respondent to be more specific if necessary**

8. What percentage of New Zealand's population do you think currently donates blood?

**Write in respondent's reply** \_\_\_\_\_ %

9. Thinking in months, how often do you think a blood donor can give blood?

**Write in respondent's reply** Every \_\_\_\_\_ months



14. And can you please tell me your blood group? *Do Not Prompt.*

**Circle ONE only.**

- A+ ..... 1
- A- ..... 2
- B+ ..... 3
- B- ..... 4
- AB+ ..... 5
- AB- ..... 6
- O+ ..... 7
- O- ..... 8
- Not Sure ..... 9

**Hand Respondent SHOWCARD 3**

**READ OUT**

Please look at this scale. It describes a series of chances that you might do something and it works like this. If I asked you what are the chances of you doing something next month, and you were practically certain that you would do this, you would answer 10. On the other hand, if you think that there is no chance that you would do this activity, the best answer would be 0. If you were uncertain, you'd choose another number as close to "0" or "10" as you think it should be.

15. Now looking at this scale, and thinking about blood donation, please tell me what chance there is that you personally will donate blood when the New Zealand Blood Service visits the campus next month.

**Record Juster Scale Probability** \_\_\_\_\_ /10

**READ OUT**

Now I'd like you to answer some questions about your feelings and beliefs about blood donation. Would you please fill out this part of the survey on your own. If you need any help, please let me know.

**HAND RESPONDENT SURVEY – PART B**

**PROCEED TO THIS SECTION AFTER RESPONDENT HAS COMPLETED  
PART B.**

**READ OUT**

Finally, would you be willing to be contacted again very briefly if I have any further questions about blood donation?

**Read if necessary....** I can assure you that all your contact details will remain confidential and that any further contact would be very brief - just in case the person doing the research needs to clarify anything with you.

16. Yes.....1 **Record name and contact details accurately below**  
No.....2

Name \_\_\_\_\_

E-mail \_\_\_\_\_

Tel. No. \_\_\_\_\_

**THANK YOU VERY MUCH FOR HELPING WITH THIS SURVEY**

## BLOOD DONATION SURVEY - PART B 2002

For each question, please circle the number on the scale that BEST describes your feeling or belief for each one.

*Please circle ONE number only on EVERY scale.*

1. For me, donating blood when the New Zealand Blood Service comes to the campus next month is:

rewarding   7     6     5     4     3     2     1   unrewarding  
extremely quite slightly neither slightly quite extremely

good   7     6     5     4     3     2     1   bad  
extremely quite slightly neither slightly quite extremely

pleasant   7     6     5     4     3     2     1   unpleasant  
extremely quite slightly neither slightly quite extremely

2. Most people who are important to me think that I should donate blood when the New Zealand Blood Service comes to the campus next month:

likely   7     6     5     4     3     2     1   unlikely  
extremely quite slightly neither slightly quite extremely

3. Donating blood is something I have done:

often   7     6     5     4     3     2     1   never

4. For me, donating blood when the New Zealand Blood Service comes to the campus next month is:

easy   7     6     5     4     3     2     1   difficult  
extremely quite slightly neither slightly quite extremely

5. I personally feel I have a moral obligation to donate blood when the New Zealand Blood Service comes to the campus next month:

likely   7     6     5     4     3     2     1   unlikely  
extremely quite slightly neither slightly quite extremely

6. Fulfilling a social responsibility is:

good   7     6     5     4     3     2     1   bad  
extremely quite slightly neither slightly quite extremely

7. Undergoing a painful experience is:

good 7 | 6 | 5 | 4 | 3 | 2 | 1 bad  
extremely quite slightly neither slightly quite extremely

8. Interacting socially with like-minded people is:

good 7 | 6 | 5 | 4 | 3 | 2 | 1 bad  
extremely quite slightly neither slightly quite extremely

9. Lazing time from work or study is:

good 7 | 6 | 5 | 4 | 3 | 2 | 1 bad  
extremely quite slightly neither slightly quite extremely

10. Generally speaking, I want to do what my friends or colleagues think I should do:

all the time 7 | 6 | 5 | 4 | 3 | 2 | 1 never

11. Generally speaking, I want to do what my family thinks I should do:

all the time 7 | 6 | 5 | 4 | 3 | 2 | 1 never

12. Generally speaking, I want to do what those in need of donated blood think I should do:

all the time 7 | 6 | 5 | 4 | 3 | 2 | 1 never

13. I can easily find out where on campus the New Zealand Blood Service is located.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

14. I can easily find out when the New Zealand Blood Service is coming to the campus.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

15. I will have time available to donate blood when the New Zealand Blood Service comes to the campus next month.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

16. If I donate blood when the New Zealand Blood Service comes to the campus next month, I will fulfil a social responsibility.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

17. If I donate blood when the New Zealand Blood Service comes to the campus next month, I will undergo a painful experience.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

18. If I donate blood when the New Zealand Blood Service comes to the campus next month, I will interact socially with like-minded people.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

19. If I donate blood when the New Zealand Blood Service comes to the campus next month, I will lose time from work or study.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

20. My friends or colleagues think I should donate blood when the New Zealand Blood Service comes to the campus next month.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

21. My family thinks I should donate blood when the New Zealand Blood Service comes to the campus next month.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

22. Those in need of donated blood think I should donate blood when the New Zealand Blood Service comes to campus next month.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

23. I can donate blood more easily if I know where on campus the New Zealand Blood Service is located.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

24. I can donate blood more easily if I know when the New Zealand Blood Service is coming to the campus.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

25. I can donate blood more easily if I have time available when the New Zealand Blood Service comes to the campus.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

26. I will donate blood when the New Zealand Blood Service comes to the campus next month.

likely 7 | 6 | 5 | 4 | 3 | 2 | 1 unlikely  
extremely quite slightly neither slightly quite extremely

The following questions are about you, just so I can be sure that I have a good cross-section of people in my sample.

27. Please indicate the year in which you were born:

Year: 19\_\_\_\_\_

28. Which of these ethnic groups do you identify with?

*Please circle ALL that apply*

European/Pakeha ..... 1  
Maori ..... 1  
Pacific Island ..... 1  
Asian ..... 1  
Other ..... 1

29. What is your gender?

Female ..... 1  
Male ..... 2

If you have any comments to make about any aspects of Blood Donation in general, or this survey in particular, please write them in the space below.

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**PLEASE HAND COMPLETED SURVEY TO THE INTERVIEWER**

## SHOWCARD 1

- I have never donated, or never attempted to donate, blood
- I have attempted to donate blood but was unable to do so
- I have donated blood before but am no longer a blood donor
- I donate blood occasionally but not more than twice a year
- I am a regular blood donor who donates 3 to 4 times per year

## **SHOWCARD 2**

- Within the last 3 months
- Within the last 6 months
- Within the last 12 months
- More than 12 months ago

### SHOWCARD 3

—	—	10	Certain, Practically Certain (99 in 100)
—	—	9	Almost Sure (9 in 10)
—	—	8	Very Probable (8 in 10)
—	—	7	Probable (7 in 10)
—	—	6	Good Possibility (6 in 10)
—	—	5	Fairly Good Possibility (5 in 10)
—	—	4	Fair Possibility (4 in 10)
—	—	3	Some Possibility (3 in 10)
—	—	2	Slight Possibility (2 in 10)
—	—	1	Very Slight Possibility (1 in 10)
—	—	0	No Chance, Almost No Chance (1 in 100)

## **APPENDIX E: QUESTIONNAIRE CODING**

## **OBTAINING RESPONDENTS' SELF-REPORTED BEHAVIOUR**

Note: Contact follow-up details were modified for the major study to allow for a four week timeframe between obtaining donation intention and the visit by the NZBS. Follow-up details were also modified according to the time elapsed since the NZBS visit.

### **Telephone:**

Hello, it's Judith Holdershaw calling from the Department of Marketing, at Massey University.

Recently, you took part in a survey on blood donation.

You were asked what chance there was that you would donate blood the following week.

I'm phoning to ask whether or not you did donate blood, or attempt to donate blood, when the New Zealand Blood Service visited the campus last week.

Thanks again for participating in this survey.

### **Email:**

Dear....

Recently, you took part in a survey on Blood Donation. You were asked what chance there was that you would donate blood when the New Zealand Blood Service (NZBS) visited the campus the following week.

To assist me further with this study, could you please tell me whether or not you did donate blood, or attempt to donate blood, when the NZBS visited the campus last week.

Just to refresh your memory, this information is being collected as part of a PhD study which examines people's beliefs and experience with blood donation.

Thank you for taking part in this survey. Your help is most appreciated.

Regards

Judith Holdershaw

**Coding Self-Reported Behaviour:**

- 1 = Did not agree to be contacted
- 2 = Unable to contact
- 3 = Did not donate, or attempt to donate, blood
- 4 = Donated, or attempted to donate, blood

## Pilot Study:

### Knowledge question coding

*Own blood group (e.g. O+, O-, B+ .....AB-)*

- 2 = know
- 0 = don't know

*How often a donor can donate blood*

- 2 = 3 months
- 1 = 2 months or 4 months
- 0 < 2 months or > 4 months

*How much blood given at each donation*

- 2 = 400-500 mls
- 1 = 200-399mls or 501-700 mls
- 0 = <200 mls or >700 mls

*Percentage of New Zealand's population who currently donates blood*

- 2 = <10%
- 1 = 10-20%
- 0 = > 20%

*How many times the NZBS visits the campus each year*

- 2 = 3 visits
- 1 = 1, 2, 4, 5 visits
- 0 = > 5 visits

*Where the NZBS mobile drive is located on campus*

- 2 = knows the location
- 0 = doesn't know the location

*Reasons why a donor is not eligible to donate blood*

Step one - each response coded:

- 0 = incorrect eligibility criterion
- 1 = vague or indirect mention of correct answer
- 2 = reasonable knowledge
- 3 = good knowledge

Step two – respondents' raw knowledge of eligibility reasons score recoded:

0 = < 5

1 = 5 to 9

2 = >9

Actual range: 0-21

*Created raw knowledge total by summing score for seven knowledge questions  
(0 – 14)*

*Actual range of raw knowledge score: 2-14*

## Major Study:

### Knowledge question coding

*Own blood group (e.g. O+, O-, B+....AB-)*

- 2 = know
- 0 = don't know

*Percentage of New Zealand's population who currently donates blood*

- 2 = <10%
- 1 = 10-20%
- 0 = > 20%

*How often a donor can donate blood*

- 2 = 3 months
- 1 = 2 months or 4 months
- 0 < 2 months or > 4 months

*How many minutes the blood donation process takes*

- 2 = 30-50 minutes
- 1 = 20 to 29 minutes or 51 to 60 minutes
- 0 = less than 20 minutes or more than 60 minutes

*How much blood given at each donation*

- 2 = 400-500 mls
- 1 = 200-399mls or 501-700 mls
- 0 = <200 mls or >700 mls

*Reasons why a donor is not eligible to donate blood*

Step one - each response coded:

- 0 = incorrect eligibility criterion
- 1 = vague or indirect mention of correct answer
- 2 = reasonable knowledge
- 3 = good knowledge

Step two – respondents' raw knowledge score of eligibility reasons recoded:

- 0 = < 7
- 1 = 7 to 12
- 2 = >12

Actual range: 0-30

*Uses for donated blood*

Step one – each response coded:

- 0 = incorrect
- 1 = some mention
- 2 = good knowledge of uses

Step two – respondents' raw knowledge of uses for blood recoded:

- 0 = < 4
- 1 = 4-6
- 2 = > 6

Actual range: 0-14

*Created raw knowledge total by summing score for seven knowledge questions (0 – 14)*

*Actual range of raw knowledge score: 0-14*

## BLOOD DONATION ELIGIBILITY CRITERIA

Numerous criteria are considered when assessing a potential donor's eligibility to donate blood in New Zealand. Examples of criteria which may lead to temporary or permanent deferral include:

- Have spent 6 months or more in the United Kingdom between January 1980 and December 1996
- Overseas travel (can still donate, however, visits to some countries may mean that only plasma is used if, for example, anti-malaria treatment has been taken)
- Weigh less than 50kg (8 stone)
- Aged under 16 years
- Aged over 60 years (if new donor) or over 75 (if existing donor)
- Glandular fever (can donate 6 months after last attack)
- Hepatitis B & C (permanent deferral)
- Hepatitis A (can donate after 12 months)
- Anaemic /low iron count /haemoglobin level (can donate as soon as iron levels normal)
- Have received tattoo or body piercing within the last 6 months
- Taking medication (is treated on a case by case basis depending on the type of medication and the level of dose)
- Taking antibiotics (can donate after 7 days from the last dose)
- Cough /cold /sore throat/ flu (deferred for 7 days or until fully recovered)
- Haemophilia (permanent deferral)
- Cancer /melanoma (permanent deferral)
- HIV /Aids (permanent deferral)
- Homosexual activity /prostitution (10 year deferral)
- Have ever injected non-prescription drugs (permanent deferral)
- Diarrhoea and vomiting (deferred for one week from recovery)
- Diabetics (not if on insulin, but can donate if diet controlled)
- Dental treatment (24 hour deferral)
- Pregnancy /miscarriage /abortion (deferred for 12 months)
- Asthma (depends on medication)
- Heart trouble (any damage or malfunction)
- Vaccinations (depends on type – 4 to 8 week deferral)

## BLOOD DONATION ELIGIBILITY CRITERIA - RESPONSES

Listed below are examples of respondents' verbatim responses given in answer to why donors may not be eligible to donate blood.

- Age
- Weight
- [If a person is] too young or too old
- [If a person is] under 16 or over 70
- Not enough blood
- The wrong [blood] type
- [If a person is] too heavy
- [If a person is] underweight
- [If a person is] under 50kg
- Physical fitness

If a person has:

- tattoos
- recent tattoos
- received a tattoo within the last six months
- piercings
- recent piercings
- received a piercing within the last six months
  
- HIV+
- had sex recently
- had unprotected sex
- had unprotected sex recently
- hepatitis or other blood borne diseases
- a disease
- an illness
- been sick
- been sick recently
- receiving medication
  
- visited disease prone countries
- visited affected countries
- been in a third world country
- been overseas
- been to Africa
- been to African countries recently
- ever visited the UK
- visited the United Kingdom within a certain time-frame
- been in England over mad cow time
- [visited] mad cow countries
- mad cow disease

## TPB: CODING INDIRECT VARIABLES

(UNIPOLAR VS. BIPOLAR SCALES)

### Pilot Study: Correlations between direct and indirect measures

#### *Correlations between Direct and Indirect Attitude*

Scale Combination	Correlation
Unipolar belief strength * Bipolar outcome evaluation <sup>#</sup>	.382**
Unipolar belief strength * Unipolar outcome evaluation	.284
Bipolar belief strength * Unipolar outcome evaluation	.182
Bipolar belief strength * Bipolar outcome evaluation	.331**

\*\* Correlation is significant at the 0.01 level (2-tailed).

# Scale combination retained for final analysis

#### *Correlations between Direct and Indirect Subjective Norm*

Scale Combination	Correlation
Unipolar belief strength * Bipolar motivation to comply	.172
Unipolar belief strength * Unipolar motivation to comply	.433**
Bipolar belief strength * Unipolar motivation to comply <sup>#</sup>	.609**
Bipolar belief strength * Bipolar motivation to comply	.109

\*\* Correlation is significant at the 0.01 level (2-tailed).

# Scale combination retained for final analysis

#### *Correlations between Direct and Indirect Perceived Behavioural Control*

Scale Combination	Correlation
Unipolar belief strength * Bipolar control power	.380**
Unipolar belief strength * Unipolar control power <sup>#</sup>	.440**
Bipolar belief strength * Unipolar control power	.373**
Bipolar belief strength * Bipolar control power	.284**

\*\* Correlation is significant at the 0.01 level (2-tailed).

# Scale combination retained for final analysis

## TPB: CODING INDIRECT VARIABLES

(UNIPOLAR VS. BIPOLAR SCALES)

### Major Study: Correlations between direct and indirect measures

#### *Correlations between Direct and Indirect Attitude*

<b>Scale Combination</b>	<b>Correlation</b>
<b>Unipolar belief strength * Bipolar outcome evaluation<sup>#</sup></b>	<b>.470**</b>
<b>Unipolar belief strength * Unipolar outcome evaluation</b>	<b>.342**</b>
<b>Bipolar belief strength * Unipolar outcome evaluation</b>	<b>.211**</b>
<b>Bipolar belief strength * Bipolar outcome evaluation</b>	<b>.361**</b>

\*\* Correlation is significant at the 0.01 level (2-tailed).

# Scale combination retained for final analysis

#### *Correlations between Direct and Indirect Subjective Norm*

<b>Scale Combination</b>	<b>Correlation</b>
<b>Unipolar belief strength * Bipolar motivation to comply</b>	<b>.202**</b>
<b>Unipolar belief strength * Unipolar motivation to comply</b>	<b>.439**</b>
<b>Bipolar belief strength * Unipolar motivation to comply<sup>#</sup></b>	<b>.505**</b>
<b>Bipolar belief strength * Bipolar motivation to comply</b>	<b>-.057</b>

\*\* Correlation is significant at the 0.01 level (2-tailed).

# Scale combination retained for final analysis

#### *Correlations between Direct and Indirect Perceived Behavioural Control*

<b>Scale Combination</b>	<b>Correlation</b>
<b>Unipolar belief strength * Bipolar control power</b>	<b>.425**</b>
<b>Unipolar belief strength * Unipolar control power<sup>#</sup></b>	<b>.439**</b>
<b>Bipolar belief strength * Unipolar control power</b>	<b>.111**</b>
<b>Bipolar belief strength * Bipolar control power</b>	<b>-.007</b>

\*\* Correlation is significant at the 0.01 level (2-tailed).

# Scale combination retained for final analysis

## **APPENDIX F: SURVEY DETAILS**

## MAJOR STUDY: SAMPLE DETAILS

### GENDER AND AGE OF RESPONDENTS

Gender	Age Group					Total (n=1007)
	Under 20 (n= 355)	20-24 (n=423)	25-29 (n= 86)	30-34 n= (59)	35+ (n=84)	
Female	36.5%	42.8%	7.9%	5.4%	7.4%	100%
Male	33.5%	40.7%	9.5%	6.5%	9.8%	100%
<b>Total</b>	<b>35.3%</b>	<b>42.0%</b>	<b>8.5%</b>	<b>5.9%</b>	<b>8.3%</b>	<b>100%</b>

Gender	Donated	Did Not Donate	Contacted
Male	48 (12%)	352 (88%)	400 (40%)
Female	74 (12%)	534 (88%)	608 (60%)
<b>Total</b>	<b>122 (12%)</b>	<b>886 (88%)</b>	<b>1008 (100%)</b>

## **APPENDIX G: SURVEY FEEDBACK**

## RESPONDENTS' VERBATIM COMMENTS

The following comments are examples of verbatim written comments received in response to the two survey stages of this study.

- This survey seems to repeat the same questions with different wording.
- The rigid use of likely-unlikely scale makes the questions hard to conceptualise!
- This survey asked some really strange questions.
- I consider Q6 [Fulfilling a social responsibility is good...bad] especially to be very leading (who would think it bad to fulfil a social responsibility); likewise Q7 [Undergoing a painful experience is good...bad].
- Very funny questions!
- Too many questions of the same manner.
- Some questions were a little unclear of what actually asking, and scales used were not necessarily reflected in what questions were asked.
- Some questions too pointed and are irrelevant leading to an inaccurate result.
- Maybe the questions could be a bit clearer e.g. Q.6 “fulfilling a social responsibility is:” assumes giving blood is considered a social responsibility by the respondent to start with.
- The questions are difficult to follow.
- The questions seem repetitive. The ‘should’ statements and their scale seem mismatched.
- Certain questions should be much more specific.
- Some of the questions are vague.
- Long questions that repeat themselves too much.
- The questions on this form seem to cover the same aspects.
- The questions that ask what others will think of my actions are silly as it is very difficult to know what people will think who I have never met before.
- Question 16 is implying that if you don't give blood you are letting down society. I donated blood once and almost passed out, felt very sick etc. This is why I will not be donating blood anytime in the near future.
- Having done a research paper, I can confidently state that some of these questions are decidedly lame!

- Some slightly stupid questions – obviously if I don't have the time, know the place or know when to donate blood, then I won't donate it.
- Similar questions.
- Question 11's intent is unclear – obviously pain will be undesirable except for masochists.
- Ridiculous questions that had only one obvious (logical) answer or made assumptions that the person being interviewed was in fact a donor and considered donating to be a social responsibility.
- The questions assume that we will all be donating blood. Also, “good” and “bad” should be a bit more specific.
- I think some of the questions were repetitive, I assume this was so you could get a consistent idea of the interviewee's responses.
- Why is this survey so moral?!?
- I didn't like the tone of the moral and social questions without having information given to me first.
- The questions were slightly hard to follow.
- Re-word the questions please.
- The survey questioning is not done well. Lots of wording is unspecific or confusing. It is also too long and many questions are repetitive.
- Subjective word use makes many questions meaningless e.g., “good”. Also structure of survey and many questions are leading.
- Very long winded and repetitive.
- Too many scale questions which seem completely irrelevant. They all seem to be asking the same thing.
- Some of my answers may seem contradicting. I want to give blood, but I am terrified of needles.
- Very long, and some parts repetitive.