The systematic recruitment of new blood donors

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THE SYSTEMATIC RECRUITMENT OF NEW BLOOD DONORS

PROEFSCHRIFT

ter verkrijging van de graad van doctor
aan de Universiteit Maastricht
op gezag van Rector Magnificus,
Prof. mr. G.P.M.F. Mols
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Chapter 1

Introduction and thesis outline

Introduction

Worldwide millions of lives are annually saved through blood donations and an adequate supply of safe blood is crucial for medical care. Since the safest blood comes from voluntary, non-remunerated blood donors, recruited from low risk populations (WHO, 2005), many countries rely on people's willingness to donate blood on a voluntary basis, among which the Netherlands. At the moment, blood supply and demand are in a precarious balance in the Netherlands. The ageing population and stricter eligibility criteria are expected to put pressure on this supply-demand balance (Sanquin, 2007). Ensuring a sufficient supply of safe blood in the long run depends on the successful recruitment of new blood donors.

In the Netherlands, potential donors register with Sanquin - the national organization of blood banks - before donating blood. Upon registration, they receive an invitation to attend a medical exam for donor eligibility; a blood sample is taken to test for transfusion transmitted diseases and to type the blood. About 4-6 weeks after the medical exam, the donors who meet the eligibility criteria receive a call to make their first donation. Donors have to wait for a second call by Sanquin before making a subsequent donation. On average, whole blood donors donate 1.5 times a year, depending on gender, blood type, and stock (Sanquin, 2007). A similar blood donation system is employed by Belgium, Sweden, and France. Other countries, like the UK, US and Canada, employ a different system; donors do not receive a call to donate by the blood bank, but they visit the blood bank at a time that suits them best or when a blood drive is held nearby.

Sanquin Blood Bank traditionally attempts to recruit new blood donors by means of recruitment leaflets, posters, and incidentally other promotional activities, like a stand at a fair. The effectiveness of these recruitment activities has not been systematically evaluated, but, overall, recruitment seems to have only limited success (Los, 2006). This may be due, at least in part, to the atheoretical approach adopted in the development of blood donor recruitment strategies. Recruitment is most likely to be effective when it is theory and evidence-based (Bartholomew, Parcel, Kok, & Gottlieb, 2006; Kok, Schaalma, De Vries, Parcel, & Paulussen, 1996). This means that we need insight in the determinants of people's donation motives that serve as targets of psychosocial interventions to enhance donation motivation. These interventions, in turn, are most likely to be effective when they are based upon theoretical insights about behaviour change and effective communication.

This doctoral thesis describes seven studies conducted to improve blood donor recruitment in the Netherlands. Three studies were conducted to gain insights into the determinants underlying blood donation intentions, the other studies aimed at finding methods to motivate non-donors to start donating blood. Below we present an overview of the blood donor research at the start of this project. As our studies were based on the Theory of Planned Behaviour, we describe this theory as well, followed by an overview of this thesis.

Blood donor research

At the start of our project, there was a wide variety of blood donor research available. Most of these studies were conducted among blood donors; only few studies targeted non-donors. The next paragraphs will provide a short review of several types of donor studies and will describe the most important results of these studies.

Who are blood donors and what are their reasons for donation?

Several early American studies about blood donation have characterized the typical blood donor as a Caucasian male in his thirties with some college or technical training and likely to be in a white collar job (Boe & Ponder, 1981; Leibrecht, Hogan, Luz, & Tobias, 1976; Oswalt, 1977; Piliavin, 1990). More recent studies, however, showed that the donor population better resembles the general population in age and gender, although donors still tend to be better educated and better paid (Healy, 2000; Piliavin, 1990; Stigum, Bosnes, Ørjasæter, Heier, & Magnus, 2001; Wu, Glynn, Schreiber, Wright, Lo, Murphy, Kleinman, & Garratty, 2001). Characteristics of the Dutch donor population have followed these trends (Sanquin, 2005).

Other studies asked donors and non-donors for their reasons to donate blood or to refrain from donation. The most common reasons reported by donors were: (i) altruistic reasons, donating blood to help someone in need; (ii) personal/family credit or replacement, to make sure donors and their families are entitled to receiving blood in case of future need or to replace the blood they received; (iii) personal satisfaction or feeling special after donating blood, and (iv) a moral obligation or sense of duty to contribute to

the blood supply. Non-donors (i) often mentioned they had never been asked to donate, (ii) gave medical excuses for not being able to donate, (iii) reported fear for blood/needles or for contracting HIV or AIDS, (iv) lack of time to donate blood, or (v) inconvenience to donate, and (vi) gave reports of feeling uncomfortable or ill after donation as reasons for not donating blood (Boe & Ponder, 1981; Breckler & Wiggins, 1989; Glynn, Kleinman, Schreiber, Zuck, Mc Combs, Bethel, Garratty, & Williams, 2002; Piliavin, 1990).

Donor retention

Donors often donate blood once and fail to return to make a subsequent donation. Temporarily deferrals for donation or experiencing vasovagal reactions decrease the likelihood of repeated donations (Halperin, Baetens, & Newman, 1998). A low Hb level is one of the common reasons for temporary deferral, especially for women of child-bearing age. Although the provision of iron supplements would decrease the deferral rate and increase the number of donations made, blood banks are usually reluctant to provide iron supplements as they can mask anaemia, which should be treated by the donor's primary physician (Bianco, Brittenham, Gilcher, Gordeuk, Kushner, Sayers, Chambers, Counts, Aylesworth, Nemo, & Alving, 2002; Brittenham, Klein, Kushner, & Ajioka, 2001; Simon, 2002).

Several researchers have studied the prevention of vasovagal reactions. Vasovagal reactions are most common in young, inexperienced donors. Applying muscle tension, drinking 500 ml water before donation or 250 mg caffeine intake decrease the likelihood of vasovagal reactions among inexperienced donors (Ditto, France, Lavoie, Roussos, & Adler, 2003; Ditto, Wilkins, France, Lavoie, & Adler, 2003; Labus, France, & Taylor, 2000; Meade, France, & Peterson, 1996; Nilsson-Sojka & Sojka, 2003; Sauer & France, 1999). A study by Bonk, France, and Taylor (2001) showed that donors with a blunting coping style (seeking for distraction) reported more vasovagal reactions than donors with a monitoring style (seeking for information). Their study further showed that vasovagal reactions can be reduced by providing 'blunters' with distraction during venipuncture, whereas 'monitors' do not benefit from distraction.

As donation stress reduces with experience (Piliavin, 1990), Ulrich, Simons, and Miles (2003) studied the effect of multimedia distraction on donation stress. During the study, video tapes (a natural, relaxing tape or energetic urban tape), day time television

or no television were available in the blood centre. Pulse rate and blood pressure were taken as measures of donation stress. Results showed that stress was lower for donors watching the nature tape compared to donors watching the urban scene. Stress was also lower when donors were not watching television compared to day time television. Both the nature tape and no television were considered as low stimulation of arousal while the urban tape and day time television were considered high stimulation, suggesting that high stimulation distracters should be avoided in a stressful situation, like the blood centre (Ulrich et al., 2003).

Donors who identify themselves as blood donors are more likely to return and make more donations than other donors. This self-identity as a blood donor develops with continued donations, acquisition of friends through donation, expectations of future donations, and descriptions of the self as blood donor (Callero, Howard, & Piliavin, 1987; Charng, Piliavin, & Callero, 1988; Lee, Piliavin, & Call, 1999). Other factors that positively influence donor return behaviour are having a convenient place to give blood and having positive donation experiences (Schreiber, Glynn, Damesyn, Wright, Tu, Dodd, & Murphy, 2003; Schreiber, Sanchez, Glynn, & Wright, 2003).

Recruitment of new donors

Several studies invested in evaluating recruitment strategies for high school students. Club 25 was developed as an educational program in South Africa for young people intending to become committed blood donors (De Coning, 2004). The program was primarily based upon having 'peer promoters' in high schools to organise donor sessions and recruit donors. In these donor sessions donating is presented as a 'cool' thing to do and pupils are educated about the functions of blood and the importance of voluntary non-remunerated donation. The effectiveness of this campaign, however, was not reported (De Coning, 2004).

Sarason, Sarason, Pierce, Shearin, and Sayers (1991) developed a school-based program for American students and evaluated whether (i) a psychological module providing students with a variety of peer role models illustrating the donation procedure, (ii) an educational module targeting the need for blood, the use of blood, and a single high school role model, or (iii) the mixed module (psychological and educational elements) in which the information from the educational approach was combined with the modelling from the

psychological approach was more effective. The standard blood bank presentation served as control group. Results showed that the psychological module increased blood donations with 16.9% and the mixed module with 24.3% compared to the control group. Both these modules included vicarious learning (e.g. a role model donated blood and was rewarded for this and blood donation was portrayed as an accepted social norm). Felts and Glascoff (1990) suggested that blood centres and schools should work together to develop school-based programs encouraging blood donation. Another possibility is engaging high school students in organising blood drives to develop certain life skills.

A study by Foss and Dempsey (1979) showed that the foot-in-the-door technique, asking students to hang up a poster announcing a blood drive, did not result in increased donations. Students who hung up a poster did not donate more often than control group students (Foss & Dempsey, 1979). Younger donors are more susceptible to incentives than older donors (Glynn, Williams, Nass, Bethel, Kessler, Scott, Fridey, Kleinman, & Schreiber, 2003). A study by Ferrari, Barone, Jason, and Rose (1985a) showed that students who were given coupons for free or reduced-price products were more likely to attend a blood drive than students who were given altruistic reasons to donate. Another study showed that incentives can be used to increase the number of people attending a worksite blood drive; more employees attended the blood drive and more units of blood were collected in companies providing incentives compared to control companies (no incentives). These incentives were provided by the company and used by recruiters to stimulate blood donation (Jason, Jackson, & Obradovic, 1987).

Ferrari, Barone, Jason, and Rose (1985b) showed that prompts may increase blood donations. Their study among American students showed that students who had filled out a pledge card to donate blood and who received a call two nights before the blood drive, were more likely to attend a blood drive than students who had not received a call after filling out the pledge card. Other researchers have studied the impact of persuasive messages and brochures to recruit new blood donors. Ferrari and Leippe (1992) showed that, although messages emphasizing that donating blood would help someone in need and fulfil one's civil responsibility did increase favourable attitudes and moral obligation to donate and although fear-reducing messages did increase people's intentions to donate, both normative and fear-reducing messages did not affect actual donation behaviour (Ferrari & Leippe, 1992). Another study showed that leaflets recruiting employees to

donate at an on-worksites blood drive (including information about the ease and safety of donation, the need for blood, and donor eligibility criteria) did not increase the number of donations made (Gimble, Kline, Makris, Muenz, & Friedman, 1994).

Blood donation determinants

At the time we started our project on improving donor recruitment strategies, in 2003, only a few studies had addressed the identification of social cognitive determinants of blood donation among non-donating populations. All these studies were based upon the Theory of Planned Behaviour (Ajzen, 1991) or extended versions of this theoretical model (Armitage & Conner, 2001a). The Theory of Planned Behaviour states that intention is the most proximal determinant of behaviour and that intention is influenced by attitude, subjective norm, and perceived behavioural control. Below we describe this theory in more detail.

Giles and Cairns (1995) applied the Theory of Planned Behaviour to blood donation and were able to explain 61% of variance in donation intentions. Attitudes towards blood donation, approval of important others (subjective norm), and the extent to which people perceive to have control over donation (perceived behavioural control) were the predictors of intention. Armitage and Conner (2001b) also showed that the Theory of Planned Behaviour can be applied to blood donation, explaining 75% of variance in intentions. Attitude, self-efficacy, and a self-identity as blood donor were the most important predictors of intention. In a second study they included moral norm (feelings of responsibility to contribute to the blood supply) and were able to explain 70% of donation intentions. In this study, self-efficacy was the most important predictor of intention; perceived behavioural control, having a self-identity as blood donor, and moral norm also contributed in the final model.

Theory of Planned Behaviour

Many social cognition models are available for understanding and changing behaviour, these models specify potentially modifiable antecedents of behaviour (Conner & Sparks, 1996). The Theory of Planned Behaviour (TPB; Ajzen, 1991) is often used to explain behaviour in general (Armitage & Conner, 2001a; Godin & Kok, 1996; Hardeman, Johnston, Johnston, Bonetti, Wareham, & Kinmonth, 2002; Kok et al., 1996) and in the context of blood donation (Armitage & Conner, 2001b; France, France, & Himawan, 2007;

Giles & Cairns, 1995; Giles, McClenahan, Cairns, & Mallet, 2004; Godin, Conner, Sheeran, Bélanger-Gravel, & Germain, 2007; Godin, Sheeran, Conner, Germain, Blondeau, Gagné, Beaulieu, & Naccache, 2005; McMahon & Byrne, 2008).

The TPB states that intention is the most proximal determinant of behaviour. Intention, in turn, is determined by attitude, subjective norm, and perceived behavioural control (Ajzen, 1991). Attitude reflects a person's evaluation of the behaviour and can be divided into an affective and a cognitive component (Conner & Sparks, 1996; Trafimow, Sheeran, Lombardo, Finlay, Brown, & Armitage, 2004). Affective attitude includes expectations of pain and fear for blood and/or needles; cognitive attitude indexes the importance of rewards and risks (Giles & Cairns, 1995; Godin et al., 2005).

Subjective norm covers the perceived social approval from important others; would others approve and value the person's decision to start donating blood? The TPB can be extended with additional measures. Next to subjective norm, descriptive norm can be included in the model. Descriptive norm reflects the perception whether others are performing the behaviour, i.e. donate blood (Godin et al., 2005; Ravis & Sheeran, 2003; Sheeran & Orbell, 1999).

Perceived behavioural control (PBC) refers to the personal control a person perceives to have over the behaviour. PBC is closely related to Bandura's construct of self-efficacy (Ajzen, 1991; Bandura, 1997, 1998). In the context of blood donation, self-efficacy has been found to be a stronger correlate of blood donation intentions (Armitage & Conner, 2001b; Giles et al., 2004). Moreover, self-efficacy beliefs are more amenable to modification than PBC (Ajzen, 1991; Bandura, 1997, 1998).

A measure of moral norm is often added to the TPB because intentions may be shaped by feelings of a moral obligation to act (Manstead & Parker, 1995; Parker, Manstead, & Stradling, 1995). Moral norm has been found to increase the predictive power of the TPB in the context of blood donation (Armitage & Conner, 2001b; Godin et al., 2005; Godin et al., 2007).

Blood donation is different from most health behaviours as it has no direct personal benefit for the individual. Theories focusing on altruism, like the norm activation model (NAM; Schwartz, 1968; Schwartz & Clausen, 1970) may be applicable to blood donation as well. The NAM, however, focuses on personal norms, excluding the influence of attitudes, subjective and descriptive norms, and self-efficacy. As the TPB can be extended with

personal norms and because several studies successfully applied the TPB to blood donation (Armitage & Conner, 2001b; Giles & Cairns, 1995), we employed the TPB in this project.

It has to be noted that the TPB is not a behavioural change theory, but was developed to predict and understand behaviour. Using the TPB reveals the most important determinants of the behavioural intention. These determinants can be targeted in behavioural change interventions, using relevant change theories.

Overview of this thesis

This thesis describes the results of a research project that aimed to support the theory- and evidence based development of future blood donor recruitment strategies. Each of the following chapters will present the results of a study that was conducted during the course of this project. Since the descriptions of each of these studies have the format of an independent research papers, the chapters partly overlap, especially the introduction sections.

This thesis starts with studies based upon the TPB that have been conducted to predict blood donation intentions in the Netherlands. Although several TPB-based studies to predict donation intentions were available at the time we conducted our studies (Armitage & Conner, 2001b; Giles & Cairns, 1995), these studies were conducted in a country (UK) with a different donation system (new donors do not have to first register with the blood bank and wait for a call to donate, but they can visit the blood bank and donate immediately) and therefore cannot be generalized without additional studies among Dutch non-donors. We therefore started our research program with studies into the determinants of blood donation intentions among Dutch non-donors. These studies are described in chapters 2 and 3.

Chapter 2 describes a study among undergraduate students at Maastricht University, using the TPB to reveal the most important determinants of blood donation intentions. As this study surveyed well-educated young adults, these findings cannot be generalized to other populations of Dutch non-donors. Moreover, this study did not include measures of altruism and fear for blood and/or needles, which might have an effect on blood donation intentions as well (Hupfer, Taylor, & Letwin, 2005; Misje, Bosnes, Gasdal, & Heier, 2005; Page, Bennett, Carter, Smith, & Woodmore, 1997; Piliavin, 1990; Piliavin & Callero, 1991). To overcome these difficulties, we conducted two more studies. The first study invited

students at the Open University Heerlen (well-educated, older students) to participate and included a measure of altruism to the TPB questionnaire. The second study targeted less well-educated young adults and included measures of both altruism and fear for blood and/or needles. These studies are described in chapter 3.

The studies described in the first chapters showed that affective attitude, subjective norms, descriptive norms, self-efficacy, and moral norms influence the intention to start donating blood. Based on these results we continued with two lines of research: (1) improving current blood donor recruitment leaflets and (2) the 'donors recruiting new donors' campaign. Chapters 4 and 5 describe studies regarding the blood donor recruitment leaflets. We conducted a content analysis onto the two most recent recruitment leaflets. The results showed that the leaflets are mainly aimed at knowledge transfer and not at recruitment, as the TPB determinants were hardly targeted in these leaflets. An experimental study among students at Maastricht University confirmed these results. These studies are described in chapter 4; chapter 5 describes an attempt to improve the current recruitment leaflet's effectiveness by including more determinant-relevant information.

Chapters 6 and 7 focus on the 'donors recruiting new donors' campaign. A study to identify the determinants of donors' willingness to engage in donor recruitment is described in chapter 6. This study revealed that more than half of the donors are willing to actively recruit new donors among family and friends and that cognitive attitude and self-efficacy are the key determinants of intention to recruit. The results of this study guided the design of the 'donors recruiting new donors' material. This material was evaluated for its effectiveness in a field study (chapter 7). Three donor centres in the South of the Netherlands participated in this field study and the results showed that donors who received the material were more active and more successful in recruiting new blood donors.

Chapter 8, the final chapter of this thesis, presents a general discussion with respect to the main findings and the strengths and limitations of the studies presented in this thesis and directions for future research.

Chapter 2

Why don't young people volunteer to give blood?

An investigation of the correlates of donation intentions
among young non-donors.

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Abstract

In the past decade the number of blood donors has steadily declined in the Netherlands, and young adults are underrepresented among registered donors. An understanding of the correlates of donation intentions among non-donors could facilitate targeting psychological prerequisites of donation decisions in recruitment campaigns. A cross-sectional study using self-administered questionnaires based on an extension of the Theory of Planned Behaviour (TPB; a social cognition model to study the determinants of volitional behaviour) was conducted to assess potential cognitive determinants of willingness to donate blood in a student sample. A response rate of 50.5% yielded a sample of 311. Just over 7% of participants were registered blood donors but most (61.7%) had never seriously considered becoming donors. Self-efficacy (confidence in performing the behaviour), attitude (the overall evaluation of the behaviour), and personal moral norm (the perceived personal responsibility to perform the behaviour) regarding blood donation were the most important correlates of the intention to become a blood donor. In total 43% of the variance in the intentions toward blood donation could be explained by a TPB-based model. Among students, determinants of the intention to become a blood donor include; self-efficacy, attitude, personal moral norm regarding blood donation, and subjective norm (perceived social support). Future research could establish whether campaigns targeting these psychological prerequisites would be more effective than current strategies.

Keywords: blood donation, Theory of Planned Behaviour, intention, young adults.

Introduction

In Europe, almost 20 million whole-blood donations are made on an annual basis and it is estimated (from Danish figures) that between 13 and 15 million Europeans are whole-blood donors (Mikkelsen, 2004). Yet, internationally, there is a continuous need for new blood donors because the demand for donor blood is increasing, while the supply of blood is declining. However, in the Netherlands, the last four years demands for donor blood have decreased and seem to have reached a new steady state. Currently, blood donations are obtained from less than 10% of the population able to donate (Armitage & Conner, 2001b; Boe & Ponder, 1981; Boulware, Ratner, Ness, Cooper, Campbell-Lee, LaVeist, & Powe, 2002; Ferguson, 1996; Giles, McClenahan, Cairns, & Mallet, 2004; Glynn, Kleinman, Schreiber, Zuck, Mc Combs, Bethel, Garratty, & Williams, 2002; Wu, Glynn, Schreiber, Wright, Lo, Murphy, Kleinman, & Garratty, 2001).

In the Netherlands, blood donors register with the national blood bank (It should be noted that, in the Netherlands, after initial registration and a medical exam for donor eligibility, a donor has to wait for a call by the blood bank before making a donation. In other countries, a donor can go to the blood bank at a suitable time or when a blood drive is held nearby (Northern Ireland Blood Transfusion Service, 2004; The National Blood Service, 2004). The last 10 years the number of donors in the Netherlands has steadily declined (Sanquin, 2002, 2003, 2005). Some donors withdraw because of age or medical limitations, but in many cases, their reasons are unknown (Sanquin, 2005). In the year 2000, 584,000 donors were registered with the national blood bank, in the year 2003 only 453,900 donors were registered (Sanquin, 2002, 2003, 2005). It has to be noted that a part of this decline is possibly due to a systematic clean-up of the donor file. To compensate for this decline in number of donors, the frequency of donations made by the donors was increased. In 2000 the average donation frequency was 1.32 times a year compared to 1.45 donations per year in 2003 (Sanquin, 2002, 2003, 2005). Another option to compensate for this decline in donors is the recruitment of new blood donors. The recruitment of young adults is especially important because, in general, they have good health and may have a long donor career. Yet young adults (aged between 18 and 30) are underrepresented among those registered with the Dutch blood bank (Sanquin, 2005). As there is no formal education about blood donation in Dutch high schools, young adults are often not familiar with donation.

Each year the Dutch blood bank attempts to recruit new donors by means of posters, leaflets and other promotion activities. The effectiveness of specific recruitment activities has not been evaluated but recruitment has had limited success, especially when blood donation is purely voluntary and non-remunerated (Ferguson, 1996). One reason may be that attempts to recruit new donors in the Netherlands have not been based upon an evidence-based understanding of the determinants of the decision to donate blood (Bartholomew, Parcel, Kok, & Gottlieb, 2001; Kok, Schaalma, De Vries, Parcel, & Paulussen, 1996). This may reflect the dearth of research into the psychological determinants of non-donation amongst non-donors. Given the lack of scientific research into the psychological determinants of blood donation, this seems not to be unique to the Netherlands, but comparable to other European countries. Previous research has focused mainly upon why donors have donated (Boe & Ponder, 1981; Glynn et al., 2002; Mikkelsen, 2004; Piliavin & Charng, 1990; Wu et al., 2001). Only three previous studies have examined the beliefs and cognitions relevant to blood donation among non-donating individuals (Armitage & Conner, 2001b; Giles & Cairns, 1995; Giles et al., 2004).

One approach to improving the effectiveness of donor recruitment strategies would be to target psychological antecedents that have been found to predict blood donation such as those specified by the Theory of Planned Behaviour (TPB; Armitage & Conner, 2001b; Giles & Cairns, 1995; Giles et al., 2004). According to this theory, behavioural intention is the primary motivational determinant of individual behaviour; the more someone intends to engage in a particular behaviour, the more likely this person will undertake it (Armitage & Conner, 1999; Conner & Armitage, 1998; Godin & Kok, 1996; Hardeman, Johnston, Johnston, Bonetti, Wareham, & Kinmonth, 2002). Creating intentions to donate is a primary target for recruitment campaigns because previous research has found that such intentions account for 23-55% of the variance in blood donation behaviour (Giles & Cairns, 1995; Giles et al., 2004). According to the TPB, strength of intention is determined by three factors: attitude, subjective norm and perceived behavioural control (Ajzen, 1991, 1998; Armitage & Conner, 1999). Attitude refers to a person's overall evaluation of the proposed behaviour, including perceptions of how good or bad the consequences are likely to be. Consequently, a positive attitude towards donating blood makes deciding to register as a donor more likely. Subjective norm refers to beliefs about whether significant others approve of a behaviour and whether that approval is valued. Thus the TPB suggests that

the more strongly a person believes that important others approve blood donation, the more likely they are to intend to donate.

The third determinant of intention, perceived behavioural control (PBC), indexes the degree to which people think they can control whether or not they are able to undertake a specified behaviour (Ajzen, 1991). PBC bolsters intention because we are not motivated to undertake tasks at which we expect to fail. PBC also predicts behaviour directly when it reflects actual control over outcomes (Ajzen, 1991). PBC is closely related to Bandura's construct of self-efficacy (that is, the belief that one can successfully perform a target behaviour; Ajzen, 1991; Bandura, 1997, 1998; Fishbein, 2000). When these two constructs have been compared as predictors of blood donation intentions, self-efficacy has been found to be the stronger correlate (Giles et al., 2004). Moreover, there is a greater body of research showing that self-efficacy beliefs are amenable to modification (Ajzen, 1991, 1998; Bandura, 1997, 1998; Fishbein, 2000). Thus, as Giles and colleagues (2004) suggest, self-efficacy may be a more useful correlate of intention than PBC, at least in the context of blood donation.

Researchers have applied the TPB to blood donation (Armitage & Conner, 2001b; Ferguson, 1996; Giles & Cairns, 1995; Giles et al., 2004) and found that the model accounted for 60-70% of the variance in intentions to donate blood, with PBC, or self-efficacy, and attitudes being the most important determinants. However, contrary to the theory, two previous studies, found that perceived social norm was not a significant predictor of blood donation intentions (Armitage & Conner, 2001b; Giles & Cairns, 1995).

Ajzen (1991) has noted that the TPB could be extended if further constructs are found to enhance the prediction of intention or behaviour and previous research indicates that personal feelings of responsibility and the awareness of a need for blood are important determinants of blood donation behaviour (Ferguson, 1996; Piliavin & Charng, 1990). Armitage and Conner (2001b) found that personal moral norm, that is, a measure of the feeling that one is morally obliged to undertake a behaviour, is an important predictor of the intention towards blood donation. It is also plausible that knowledge about blood donation and how much knowledge people think they have may affect intentions to give blood. Finally, anticipated regret in relation to not performing a behaviour has been found to predict other health-related intentions (Abraham & Sheeran, 2004; Zeelenberg, 1999),

but anticipated affective consequences have not been examined in the context of decisions to become a blood donor. The higher the intentions to perform a particular behaviour are, the more likely it is that the behaviour will indeed be performed (Armitage & Conner, 1999; Conner & Armitage, 1998; Godin & Kok, 1996). For instance, the more one intends to become a blood donor, the more likely it is that this person will register for blood donation and make a first donation.

Most previous studies have modelled psychological determinants by examining measures taken from donating individuals (Boe & Ponder, 1981; Glynn et al., 2002; Mikkelsen, 2004; Piliavin & Charng, 1990; Wu et al., 2001). Such research relies upon people's autobiographic memory of their donation motivation and this may be unreliable because donors' motivation to continue giving blood may be different from their motivation to give blood initially, because the experience of donating may change perceptions. Certainly, the reasons given for donating among experienced donors differ from those given by new donors. A review of studies investigating correlates of blood donation found that while first-time donors primarily report external motivations for donating blood (for example, a supply shortage), experienced donors primarily report internal reasons for donating blood (for example, it makes them feel good about themselves; Ferguson, 1996; Piliavin & Charng, 1990). Since campaigns to recruit new blood donors target non-donors, it is important that these campaigns are tailored to affect psychological prerequisites of the decision to donate for the first time. Such recruitment campaigns may be combined with retention campaigns designed to bolster and sustain motivation among registered donors.

The present study

This study was designed to investigate the nature of blood donation motivation among a population of young adults who were not donating blood. The study used an extended version of TPB to identify correlates of blood donation motivation. Since previous findings have suggested that self-efficacy was a better predictor of blood donation than PBC we employed only the former measure. In addition to measuring attitude and subjective norm directly we also assessed behavioural beliefs that might underpin attitudes and specific sources of social influence that could contribute to subjective norms, thereby, exploring the cognitive foundations of these theory-specified cognitions.

We extended the TPB by including measures of personal moral norm toward blood donation, knowledge about blood donation, perceived knowledge (Conner & Armitage, 1998), as well as anticipated affective consequences (Abraham & Sheeran, 2004; Zeelenberg, 1999). Anticipated affective consequences have been found to predict intention directly (Abraham & Sheeran, 2004) but anticipated consequences are also a central aspect of the attitude construct. Consequently, we tested the utility of anticipated affective consequences as correlates both of attitude and intention. Figure 2.1 depicts the theoretical model, and the specific hypotheses, tested in this study. TPB constructs (with self-efficacy substituted for PBC) are highlighted in bold.

Figure 2.1. Model of Psychological Correlates of Blood Donation Intentions

Methods

Participants and procedure

Participants were recruited from first and second year undergraduate students of the schools of Health Sciences and Psychology at Maastricht University. Questionnaires were distributed through the students' internal mailboxes. A covering letter explained that the questionnaire concerned blood donation and that the data would be used to facilitate development of new educational strategies for the recruitment of blood donors. The letter also informed participants that a prize draw would take place in which participants could win a trip to Paris for two by completing and returning the questionnaire. Completing the questionnaire took approximately 15-20 minutes and questionnaires were returned to the experimenter's mailbox.

Of the 616 questionnaires that were distributed, 311 questionnaires were completed and returned (50.5%). Twenty-two participants were excluded from the analysis because they were registered blood donors; one participant was excluded because she had withdrawn from donating and four were excluded because they had been turned down for blood donor registration. This left a sample of 284 non-donors for analyses. The majority of respondents were female (84%; $N = 238$) with a mean age of 19.7 years, ranging from 17 to 44 years.

Measures

Sex, age, and whether the participant had ever been turned down for blood donation were recorded. Cognition measures were derived from validated published measures and three focus group discussions with students ($N = 20$), and were tested for comprehensibility among ten students. Unless otherwise stated items employed seven-point response options, ranging from 1 = completely agree to 7 = completely disagree. Measures were coded so that higher scores represented pro-donation views and mean scores were used to represent reliable scales.

Attitude. Direct attitude towards blood donation was measured with 4 bipolar statements (i.e., 'good – bad', 'pleasant – unpleasant', 'enjoyable – annoying', and 'frightening – not frightening'). Cronbach's alpha was $\alpha = 0.65^*$.

Behavioural beliefs which may underpin attitudes were assessed using 9 items (i.e. 'I think blood and/or needles are frightening', 'donating blood is a man's job', 'if you donate blood, you are not able to physically exercise that day', 'donating blood is painful for a moment', 'people who live a regular life are more likely to be blood donors than students', 'you are nervous and tense before every donation', 'when you donate blood there is a possibility to get dizzy or faint', 'donating blood costs me time and is not rewarding', and 'when you donate blood, you do not feel 100% well that day').

Anticipated affective consequences were measured by five anticipated items asking respondents to imagine how they would anticipate to feel after blood donation (i.e. 'pride – no pride', 'pleased – displeased', 'cheerful – not cheerful', 'relieved – tensed', and 'satisfied – dissatisfied'; $\alpha = 0.76$).

Subjective norm. One item measured the subjective norm regarding blood donation ('Most people important to me think I should donate blood').

Sources of social influences underpinning subjective norm were assessed by asking whether parents, friends and partner would think the person in question should donate blood (e.g. 'My parents think I should donate blood'). These sources of social influence were multiplied by the corresponding motivations to comply with the agent in question (e.g. 'I normally do what my parents want me to do') to assess the importance of social approval.

Self-efficacy. Six items measured subjects' perceived self-efficacy toward blood donation (e.g., 'If I wanted to, I could easily donate blood', 'If I wanted to donate blood, it would be easy for me to make an appointment', 'I am able to cope with the tension and nervousness that may be associated with giving blood'; $\alpha = 0.68$).

Intention to become a blood donor was measured by 3 items (i.e. 'Do you intend to give blood in the next months?', 'How likely are you to give blood in the next months?', and 'Do you intend to register as a blood donor in the next month?'; $\alpha = 0.93$).

Personal moral norm was measured by 3 items (i.e. 'I feel a moral obligation to give blood', 'I feel a personal responsibility to give blood', and 'It is a social obligation to give blood'; $\alpha = 0.83$).

Perceived Knowledge. How well-informed respondents felt they were about blood donation was measured using 3 items (i.e. 'I am well-informed about the importance of

*Cronbach's alpha is the degree of internal consistency. The Cronbach's alpha is based on the average inter-item correlation. Cronbach's alpha ranges between 0 and 1. Cronbach's alpha > 0.60 is satisfactory and Cronbach's alpha > 0.80 is good (Streiner, 2003).

blood donation', 'I am well-informed about the registration procedure for blood donation', and 'I am well-informed about the procedures of donating blood itself'; $\alpha = 0.87$).

Knowledge. Subjects' knowledge about blood donation was indexed by means of 15 true - false questions. Participants were asked not to guess, but to mark the 'I don't know' answer possibility if they did not know the correct answer. The knowledge questions addressed requirements for donation eligibility, the procedures involved in blood donation, the tests that are conducted on the donor blood, the need for blood, the opening hours of the blood bank, what types of blood the blood bank is interested in, and the possibility of buying and selling blood in foreign countries. A correct answer was given +1 point, an incorrect answer -1 point and an 'I don't know' answer 0 points. The sum score for knowledge could range between -15 and +15 points.

Blood donation status. Participants were presented with 11 statements and asked to select which statement described him or her best (i.e. 'I have never thought of giving blood myself', 'I have given some thought to giving blood', 'I have seriously considered giving blood', 'I have applied for information', 'I am considering registering for blood donation this year', 'I am considering registering for blood donation this month', 'I have recently registered for blood donation', 'I am a blood donor', 'I am a blood donor, but I am considering withdrawing my registration', 'I used to be a blood donor, but I have withdrawn my registration'). This measure was derived from those used to categorize respondents in relation to stages of change (Prochaska, DiClemente, & Norcross, 1992).

Data analysis

Statistical Package for Social Sciences (SPSS 11.0) was used to analyze the data. The demographic variables and blood donations status were analyzed using Chi-square tests. A correlation matrix was requested for all the determinants of the extended TPB (see Figure 2.1) and the behavioural intention. Hierarchical multiple regression analysis was conducted to analyze the relations between the determinants of the intention to become a blood donor and the behavioural intention, using the Enter Method to enter the determinants subsequently. Stepwise regression analyses were conducted both for the attitude on the behavioural beliefs and anticipated affective consequences expected to influence attitude and for subjective norm on the social influences undermining subjective norm.

To analyze the differences between the participants with high and low intentions to register for blood donation, the sample was divided into two groups based on a median split. Multivariate Analysis of Variance (MANOVA) was conducted to analyze differences between low and high intenders, followed by subsequent Univariate Analyses of Variance (ANOVA's) to explore these differences for all the determinants. The same procedure was repeated to analyze the differences between the participants who had never considered blood donation and the participants who were blood donors already. These groups were based on blood donation status.

Results

Blood donation status

Table 2.1 shows that, apart from the twenty-two students (7.1%) who were registered donors, 192, (61.7%) had never thought of blood donation or considered it only once; 65 (20.9%) had seriously considered donating blood or had applied for information, and 18 (5.8%) considered registering as a blood donor in the near future.

Table 2.1. Blood donation status

Stage	Number (n)	Percentage (%)
Never thought of blood donation	58	18.6
Considered blood donation once	134	43.1
Seriously considered blood donation	59	19.0
Applied for information	6	1.9
Considering registering this year	15	4.8
Considering registering this month	3	1.0
Recently registered	4	1.3
Current donor	18	5.8
Previous but now withdrawn donor	1	0.3
Missing data	13	4.2
Total	311	100

Correlates of intentions to donate

Table 2.2 presents the Pearson correlations, means and standard deviations for the extended TPB variables. Participants had moderately positive self-efficacy and attitude towards blood donation but weaker subjective norms, personal moral norms, and perceived knowledge and intentions ($M = 3.08$ on a seven point response scale). Respondents' knowledge concerning blood donation was notably low with a mean score of 3.5 out of 15.

Table 2.2. Intercorrelations for Extended Theory of Planned Behaviour Variables

	1	2	3	4	5	6	7	8
1. Intention								
2. Self-efficacy	.35***							
3. Attitude	.49***	.39***						
4. Subjective norm	.36***	-.06	.13					
5. Personal moral norm	.50***	.15*	.27***	.45***				
6. Anticipated affective consequences	.03	.08	.09	.11	.06			
7. Perceived knowledge	.10**	.01	.01	.11	.07	-.04		
8. Knowledge	-.01	.10	.07	-.03	-.01	-.11	.26***	
Mean	3.08 ¹	5.35 ¹	4.38 ¹	3.09 ¹	3.68 ¹	5.06 ¹	2.44 ¹	3.54
Standard deviation	1.35	.78	.96	1.47	1.28	.85	1.25	2.37

* $p < .05$, ** $p < .01$, *** $p < .001$

¹ Scores range between 1 and 7

Hierarchical multiple regression was employed to explore the correlates of intention. Table 2.3 shows the regression statistics, including the standardized regression coefficients (betas) for each step. Self-efficacy alone explained 12% of the variance in intention. Entering attitude while controlling for self-efficacy contributed an additional 15% of explained variance and subjective norm contributed for an additional 5%. Thus the TPB (including self-efficacy instead of PBC) accounted for 31% of the variance in blood donation intentions.

Table 2.3. Hierarchical regression of intention on extended TPB variables

Step / Variable entered	Beta	Beta	Beta	Beta	Beta	Beta	Beta
Self-efficacy	.34***	.18**	.20***	.17**	.17**	.17**	.17***
Attitude		.42***	.39***	.32***	.32***	.32***	.32***
Subjective norm			.23***	.12**	.12**	.11*	.11*
Personal moral norm				.35***	.35***	.35***	.32***
Anticipated affective consequences					-.03	-.03	-.03
Perceived knowledge						.07	.09
Knowledge							-.08
R ²	.12	.26	.31	.41	.42	.42	.43
R ² change	.12	.15	.05	.10	.00	.01	.01
F change	37.46***	55.62***	20.22***	48.32***	.41	2.46	2.55

* $p < .05$, ** $p < .01$, *** $p < .001$

R² = an estimate of the proportion of the variance of the dependent variable (intention) accounted for by predictor variables (determinants; Kinnear & Gray, 2000). R² ranges between 0 and 1 (Pebesma, 2004)

Beta = the Beta coefficient is the change in the dependent variable (expressed in standard deviation units) that would be produced by a positive increment of one standard deviation in the independent variable (Kinnear & Gray, 2000)

F = the F statistic is the ratio of the mean square for regression to the residual square (Kinnear & Gray, 2000)

Personal moral norm contributed an additional 10%, while anticipated affective consequences, perceived knowledge, and assessed knowledge were non-significant predictors in the final equation. The final equation, including TPB measures, personal moral norm, anticipated affective consequences, perceived knowledge, and assessed knowledge explained 43% of the variance in intention ($F(7, 276) = 29.20$, $R^2 = 0.43$).

Correlations between the behavioural beliefs and the direct attitude measure ranged from -0.01 (for the items referring to 'physical exercise' and 'man's job') to 0.51 and 0.63 (for the items referring 'being nervous and tense' and 'blood and/or needles are frightening', respectively). The correlation between the general anticipated affect measure and intention was 0.05. Table 2.4 shows the stepwise regression of attitude onto behavioural beliefs and the anticipated affective consequences measure. Only 4 of the 9 behavioural beliefs items and 1 anticipated affective consequences item accounted for unique variance in attitudes. Being frightened for blood and/or needles explained 40% of

the variance. Anticipating feeling nervous and tense before every donation accounts for an additional 5%. Anticipating feeling happy after donation explained an additional 2% of the variance and the belief that donating blood costs time and is not rewarding and that donating is painful both contributed 1% resulting in a total of 49% of the variance in direct attitude ($F(5, 278) = 53.59, R^2 = 0.49$). Thus these five key beliefs constitute a core foundation of attitudes towards blood donation, which in turn, is one of the most important correlates of strength of intention to donate (see Table 2.3).

Table 2.4. Stepwise regression of attitude on behavioural beliefs

Step / Variable entered	Beta	Beta	Beta	Beta	Beta
Blood/needles are frightening	.63***	.50***	.49***	.46***	.45***
Being nervous and tensed		.26***	.26***	.22***	.21***
Being happy after donation			.13**	.14**	.13**
Donating is painful				.13*	.12*
It costs time and is unrewarding					.10*
R ²	.40	.45	.47	.48	.49
R ² change	.40	.05	.02	.01	.01
F change	187.60***	26.56***	9.22**	6.44*	5.45*

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 2.5 shows the stepwise regression of subjective norm onto sources of social influences. Correlations between the 3 sources of social influences and subjective norm ranged from 0.77 to 0.82. Whether parents think the participant should donate blood accounted for 45% of the variance in subjective norm. The approval of friends accounted for an additional 7% and partner approval added a further 2%, resulting in a collective 54% of explained variance in subjective norm ($F(3, 280) = 108.32, R^2 = 0.54$). Interestingly the correlations between these sources of social influence and personal moral norm were moderate, ranging between 0.40 and 0.46. However, when personal moral norm was regressed onto sources of social influence, approval of parents accounted for 10% of the variance but the other two sources, collectively, explained only 3% of additional variance, suggesting that the foundations of personal moral norm are not adequately conceptualized by these sources of social influence.

Table 2.5. Stepwise regression of subjective norm on sources of normative influence

Step / Variable entered	Beta	Beta	Beta
Parents	.67***	.48***	.43***
Friends		.32***	.27***
Partner			.18***
R ²	.45	.51	.54
R ² change	.45	.07	.02
F change	227.86***	38.90***	13.91***

* $p < .05$, ** $p < .01$, *** $p < .001$

Differences between low and high intenders

To explore differences between those with stronger and weaker donation motivation, the sample was divided into two groups on the basis of a median split in the intention distribution (median = 3.0). The mean intention score for the low intention group was $M = 1.82$ ($SD = 0.59$), and for high intenders $M = 4.27$ ($SD = 0.78$).

A Multivariate Analysis of Variance (MANOVA) conducted on self-efficacy, attitude, subjective norm, personal moral norms, anticipated affective consequences, perceived knowledge and knowledge showed that the groups differ significantly on these variables (Wilks' $\lambda = 0.708$; $F = 2.89$; $p < 0.05$). Subsequent Univariate Analyses of Variance (ANOVA) showed that high intenders have a significantly higher self-efficacy and more positive attitudes, more supportive subjective norms, more pro-donating personal moral norms, and higher perceived knowledge, although there were no differences for anticipated affective consequences and assessed knowledge (see Table 2.6).

Further ANOVA's were conducted to explore differences on specific behavioural beliefs, specific anticipated affective consequences and specific sources of social influence. Non-donors with higher donating intentions were especially less frightened by blood and/or needles. They were less convinced that donating blood is painful and were less likely to believe that donating blood is costly and not rewarding. High intenders are also more likely to anticipate feeling pleased after donation. In addition, high intenders expected greater approval for donating from all three sources of social influence; parents, partners and friends.

Table 2.6. Differences between high and low intenders

	Low Intenders (<i>N</i> = 126) Mean (<i>SD</i>)	High Intenders (<i>N</i> = 135) Mean (<i>SD</i>)	<i>F</i> value	<i>P</i> value
Self-efficacy	5.09 (.74)	5.61 (.73)	32.03	.00
Attitude	3.95 (.91)	4.79 (.82)	60.39	.00
Behavioural Beliefs				
Frightening	3.98 (2.17)	4.87 (1.18)	13.00	.00
Man's job	6.73 (.57)	6.79 (.62)	.71	.40
Physical exercise	4.33 (1.51)	4.04 (1.53)	2.35	.13
Painful	2.85 (1.36)	3.27 (1.47)	5.67	.02
Regular life	6.16 (1.06)	6.20 (1.10)	.10	.76
Nervous and tense	2.67 (1.47)	3.14 (1.43)	6.80	.14
Dizzy or faint	3.14 (1.40)	3.40 (1.39)	2.22	.16
Costly and unrewarded	4.43 (1.49)	4.97 (1.43)	9.00	.00
Not 100% well	3.36 (1.41)	3.36 (1.27)	.00	.99
Anticipated affective consequences	2.02 (.81)	5.07 (.87)	.13	.72
Pride	5.22 (1.29)	5.39 (1.32)	.58	.45
Pleased	5.62 (1.03)	5.96 (.84)	4.39	.04
Happy	4.39 (1.26)	4.46 (1.13)	.11	.75
Relieved	5.13 (1.44)	5.14 (1.07)	.00	.95
Satisfied	5.65 (1.00)	5.90 (.90)	2.36	.13
Subjective Norm	2.54 (1.35)	3.55 (1.43)	15.96	.00
Parents	2.51 (1.20)	3.32 (1.43)	14.76	.00
Friends	2.22 (1.24)	3.59 (1.47)	28.02	.00
Partner	2.35 (1.26)	3.64 (1.42)	21.08	.00
Personal Moral Norms	3.06 (1.21)	4.21 (1.12)	62.99	.00
Perceived Knowledge	2.21 (1.11)	2.58 (1.28)	5.99	.02
Knowledge	3.55 (2.26)	3.47 (2.50)	.06	.80

Differences between 'never considered' and 'already registered' students

Finally, we explored differences between students who have never considered donating blood and the group of students who are already registered as blood donors. Respondents who had considered blood donation, but had not registered yet were excluded from this analysis, leaving 58 students who had never considered blood donation and 22 students who are registered as blood donors.

A MANOVA conducted on intention, self-efficacy, attitude, subjective norm, personal moral norms, anticipated affective consequences, perceived knowledge and knowledge showed that the groups differ significantly on these variables (Wilks' λ = 0.159; F = 9.79; p = 0.00).

Subsequent ANOVA's showed that already registered donors have higher intentions to donate, higher self-efficacy in relation to donating, more positive attitudes towards donating, more positive personal moral norm, greater perceived knowledge and greater knowledge than participants who have never considered blood donation (see Table 2.7).

Further ANOVA's were conducted to explore differences on specific behavioural beliefs, specific anticipated affective consequences and specific sources of social influence. Those who had already registered were less frightened by blood and/or needles and were less likely to believe that donating blood was for people other than students who live a regular life. The registered group also regards donating as less costly and unrewarding and they are less likely to believe that they will not feel 100% well on the day of donation. In addition they expect to feel more pleased after donation and are more likely to believe that their parents and friends approve of blood donation.

Discussion

Recruitment of young adults as blood donors could offset the ongoing decline in donors, especially because this group has the potential to donate blood over decades. Yet this group are underrepresented among donors (Sanquin Blood Bank, 2004) and few previous studies have focused on the beliefs and attitudes of this group. Targeting the beliefs and cognitions, which are associated with blood donation motivation, is likely to enhance the effectiveness of recruitment campaigns targeting young adults (Bartholomew et al.,

Table 2.7. Differences between 'never considered' and 'already registered'

	Never Considered (<i>N</i> = 58) Mean (<i>SD</i>)	Already Registered (<i>N</i> = 22) Mean (<i>SD</i>)	<i>F</i> value	<i>P</i> value
Intention	2.55 (1.22)	7.00 (.59)	278.81	.00
Self-efficacy	5.13 (.75)	6.48 (.54)	57.85	.00
Attitude	4.13 (.93)	5.78 (1.11)	44.94	.00
Behavioural Beliefs				
Frightening	4.38 (1.92)	5.68 (.46)	8.30	.01
Men's job	6.69 (.63)	6.91 (.29)	2.47	.12
Physical exercise	4.50 (1.61)	4.27 (1.91)	.29	.59
Painful	3.09 (1.55)	3.36 (1.81)	.47	.50
Regular life	5.79 (1.21)	6.86 (.35)	16.56	.00
Nervous and tense	3.00 (1.67)	3.55 (1.82)	1.63	.21
Dizzy or faint	3.66 (1.47)	3.68 (1.76)	.01	.95
Costly and unrewarded	4.50 (1.25)	5.86 (1.70)	15.52	.00
Not 100% well	3.36 (1.33)	4.27 (1.70)	6.38	.01
Anticipated affective consequences				
Pride	5.09 (1.08)	5.23 (1.36)	.14	.71
Pleased	5.32 (1.12)	6.23 (.93)	6.73	.01
Happy	4.24 (1.33)	5.00 (.71)	3.86	.06
Relieved	4.85 (1.26)	5.23 (1.09)	.91	.35
Satisfied	5.50 (.99)	6.00 (1.08)	2.28	.14
Subjective Norm	2.71 (1.38)	3.41 (1.54)	2.15	.15
Parents	2.58 (1.27)	3.83 (1.51)	8.94	.01
Friends	2.37 (1.26)	3.45 (1.57)	4.33	.05
Partner	2.82 (1.47)	3.50 (1.93)	.95	.34
Personal Moral Norms	3.08 (1.26)	4.58 (1.56)	19.61	.00
Perceived Knowledge	1.79 (.93)	5.74 (1.28)	232.52	.00
Knowledge	2.41 (2.02)	6.57 (2.20)	62.33	.00

2001; Kok et al., 1996). This study investigated the correlates of young non-donors' intentions to donate and found that the Theory of Planned Behaviour provides a good basis for understanding these cognitions. In addition, we investigated the specific beliefs and expectations that distinguished between those with weaker and stronger intentions and between a group who had registered and those who had not considered registering. The results highlight a set of beliefs that could be targeted in future recruitment campaigns.

Our sample reflected national trends with just over 7% of respondents having registered as donors. A further 27% had considered donating seriously but approximately 62% had considered donating only once or not at all. Moreover, most students acknowledged the value and importance of blood donation and a safe blood supply but felt, and were, uninformed about blood donation. This implies that there is considerable potential for campaigns to inform students about blood donation and to raise the question of personal blood donation more successfully in this population.

The results further supported the applicability of the Theory of Planned Behaviour as a model of the cognitive antecedents of blood donation. In line with previous studies, our expanded version of the theory accounted for 43% of the variance in donation intentions (Armitage & Conner, 2001b; Giles & Cairns, 1995; Giles et al., 2004; Godin & Kok, 1996). Although both Armitage and Conner (2001b), Giles and Cairns (1995), and Giles and colleagues (2004) were able to account for a larger proportion of variance in donation intentions, these studies did not distinguish between blood donors and non-donors. Our focus was on the beliefs of non-donors but it is noteworthy that when our small proportion of donors was included, our model accounted for 52% of the variance in donor intention, which constitutes a large effect size (Cohen, 1988).

Our results show that self-efficacy, attitude and to a lesser degree the subjective norm are important correlates of donation intentions. In addition, our extension of the TPB revealed that personal moral norm is a fourth predictor of donation intention. It is interesting to note here that anticipated affective consequences, perceived knowledge, and knowledge were not predictive of donation intentions. It is possible that anticipated affective consequences were not predictive, because non-donors have never donated blood before and therefore cannot accurately imagine how one feels after donation. Both perceived knowledge and knowledge were low among non-donors. Over 80% of the non-

donors felt ill-informed and 90% had 7 points or less on the knowledge questions (with a maximum of 15 points). This implies that campaigns targeting self-efficacy, attitudes, subjective norm, and personal moral norm are likely to be more effective in engendering donation intentions than simple information provision.

Attitude was the strongest correlate of donation intentions and our analyses revealed that 49% of the variance in attitudes towards donation was accounted for by five key beliefs; in particular the extent to which respondents felt that blood and needles were frightening and anticipated feeling nervous and tense before donation. These two beliefs accounted for 45% of the variance in attitudes towards donation. These results suggest that campaigns should not highlight the role of needles and blood in donation. Thus, images of blood bags on red backgrounds, which have featured in some Dutch recruitment campaigns, could potentially be counter-productive. In addition, campaigns could seek to reassure potential donors that current donors do not feel nervous and tense before donation, although we found no significant differences between our small already-registered group and our sample of non-donors in relation to anticipation of nervousness before donation. In addition, reassuring non-donors that donation is not painful or costly and unrewarding but, by contrast, can make donors feel happy about having made a worthwhile contribution could help strengthen donation intentions.

Subjective norm was influenced by the social influences of parents, friends and partners. These social influences were also related to personal moral norms, but only accounted for 13% of the variance. This suggests that campaigns implying that parents, friends and partners would approve of blood donation could enhance donation intentions. It also implies that further research is needed to identify antecedents of personal moral norms in relation to blood donation.

All respondents were relatively confident in their ability to become a blood donor and donate blood but, nonetheless, high intenders had significantly higher self-efficacy scores, suggesting that improving self-efficacy is important in donor recruitment. High intenders also had somewhat positive attitudes towards blood donation, whereas the attitude of low intenders was rather neutral. High intenders also had stronger subjective and personal moral norms than low intenders. These findings reinforce the results of the regression analyses.

Both the perceived and the assessed knowledge of high and low intenders were low. Students felt, and were, ill-informed about the need for and importance of donor blood, and about the procedures concerning registration and blood donation, albeit low intenders more than high intenders. While knowledge was not a significant correlate of donation intentions and the correlation between perceived knowledge and intention was low, our results do suggest that making non-donors feel more informed about donation could encourage donation intentions. However, our overall findings strongly suggest that it is not information but persuasion into more positive attitudes, self-efficacy, subjective and personal moral norms that is likely to encourage students to become donors.

In addition to our exploration of the correlates of donation motivation among non-donors, we also compared the determinants of blood donation intentions between a small group of donors and a sub-sample of non-donors who had never considered donating blood. These analyses confirmed our findings in relation to the correlates of donation intentions. Those who had already registered had significantly higher scores on all our theory derived measures, except subjective norm and anticipated affective consequences. Moreover, compared to registered donors, students who had never considered blood donation were more likely to be frightened by blood and/or needles, to expect donation to be costly and unrewarding, to believe that they would not feel 100% well on the day of donation and to associate blood donation with people other than students. This group was also less likely to believe that they would feel pleased after having donated blood. The capacity of these determinants to distinguish between those who have never considered donation and those who have registered further underlines the potential of campaigns targeting these potentially modifiable determinants.

Our results should be interpreted cautiously. The majority of our sample was female, which reflects the male-female distribution for psychology and health sciences, - 74,4% and 77,3%, respectively (Maastricht University, 2002), - but not for the whole population of young adults in the Netherlands, which is about 50-50% (CBS, 2003). Besides only a small proportion – approximately 15% - of the Dutch young adults are university students (CBS, 2003; Ministerie van Onderwijs, Cultuur, & Wetenschap, 2002). Therefore our results cannot be generalized to young adults who are not students so further research is required to test the theoretical model supported by our data among other groups of young non-

donating adults. Moreover, while our findings highlight cognitive correlates of donation intentions we have not demonstrated that these can be changed through persuasive communication or that any such changes would lead to subsequent shifts in donation motivation or increased donation registration. Experimental evaluation of persuasive efforts targeting the determinants highlighted here is required to establish whether our theoretical model can be translated into effective donation promotion campaigns.

Further research could also extend the model tested here. For example, several studies among donors have found that altruism is a common reason for donation (Boe & Ponder, 1981; Ferguson, 1996; Glynn et al., 2002; Piliavin & Charng, 1990; Pomoza & Jaccard, 1976). It would be interesting to know how altruism is related to the determinants investigated in this study. It is possible that these determinants (e.g., attitude towards donation) mediate the relationship between altruism and donation intentions.

These limitations notwithstanding, our findings strongly suggest that investment in the evaluation of theory-based approaches to persuading students to donate blood could result in more effective approaches to recruiting young adults into the Dutch blood bank. Our results highlighted a series of specific beliefs and more general determinants that could be targeted in recruitment campaigns. The capacity of these determinants to predict donation intentions amongst non-donors and to distinguish between those who have never considered donation and those who have already registered suggest that they are important constituents of blood donation motivation.

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Chapter 3

Modelling antecedents of blood donation motivation among non-donors of varying age and education

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Abstract

Understanding blood donation motivation among non-donors is prerequisite to effective recruitment. Two studies explored the psychological antecedents of blood donation motivation and the generalisability of a model of donation motivation across groups differing in age and educational level. An older well-educated population and a younger less well-educated population were sampled. The studies assessed the role of altruism, fear of blood/needles and donation-specific cognitions including attitudes and normative beliefs derived from an extended Theory of Planned Behaviour. Across both samples, results showed that affective attitude, subjective norm, descriptive norm, and moral norm were the most important correlates of blood donation intentions. Self-efficacy was more important among the younger less well educated group. Altruism was related to donation motivation but only indirectly through moral norm. Similarly, fear of blood/needles only had an indirect effect on motivation through affective attitude and self-efficacy. Additional analyses with the combined data set found no age or education moderation effects, suggesting that this core model of donation-specific cognitions can be used to inform future practical interventions recruiting new blood donors in the general population.

Keywords: blood donation, intention, Theory of Planned Behaviour, affective attitude, altruism, fear.

Introduction

Worldwide many lives depend on the availability of safe blood supplies for transfusions and medical procedures. Most countries rely on voluntary donation without remuneration to ensure blood safety. Some countries have supply problems, suffer seasonal shortages and rely on family replacement or paid donations (World Health Organization [WHO], 2005). In the Netherlands, blood supply and demand are approaching balance. Of those eligible for blood donation (approximately 60% of the Dutch population), only 4% are registered blood donors (personal communication, Sanquin Blood Bank Database, 2007). Moreover, factors including deferring potential donors who have received a transfusion, in order to prevent transmission of Creutzfeld Jakob's Disease, and ageing populations are likely to increase pressure on the supply-demand balance. Consequently, the longer-term availability of blood depends critically on successful recruitment of new donors.

Blood banks attempt to recruit new donors by means of posters, leaflets and other promotional activities. The effectiveness of specific recruitment activities has not been systematically evaluated but, overall, recruitment of voluntary donors has only limited success (Ferguson, 1996). This may be due, at least in part, to the atheoretical approach adopted in the development of recruitment strategies (Bartholomew, Parcel, Kok, & Gottlieb, 2006; Kok, Schaalma, De Vries, Parcel, & Paulussen, 1996). Recruitment effectiveness may be improved by targeting psychological antecedents known to predict donation decisions (Armitage & Conner, 2001b; Giles & Cairns, 1995; Giles, McClenahan, Cairns, & Mallet, 2004; Lemmens, Abraham, Hoekstra, Ruiter, De Kort, Brug, & Schaalma, 2005).

Blood donation intentions and extended Theory of Planned Behaviour models

Social cognition models, such as the Theory of Planned Behaviour (TPB; Ajzen, 1991; 2002), specify potentially modifiable cognitive antecedents of health behaviours (Conner & Sparks, 2005). The TPB proposes that intention is the most proximal determinant of action and that, intention is, in turn, determined by attitude, subjective norm, and perceived behavioural control. Attitude represents a person's evaluation of the behaviour (e.g., will it lead to valued outcomes?). Subjective norm reflects perceived social approval of acting (or

not acting), while perceived behavioural control (PBC) refers to a person's perception of performance control. Perceived control bolsters intentions because people are more likely to strive to achieve feasible goals and also promotes action because greater confidence leads to enhanced effort and perseverance. PBC is closely related to Bandura's construct of self-efficacy (feeling able to successfully perform the target behaviour (Ajzen, 1991; Bandura, 1997, 1998). In the context of blood donation, self-efficacy has been found to be a stronger correlate of blood donation intentions than PBC (Armitage & Conner, 2001b; Giles et al., 2004). Moreover, several studies showed that self-efficacy beliefs are more amenable to modification (Ajzen, 1991, 1998; Bandura, 1997, 1998). Tests of the TPB indicate that it typically accounts for between 39% and 42% of the variance in behavioural intention (Armitage & Conner, 2001a; Godin & Kok, 1996).

Several researchers have applied the TPB to blood donation. Sampling undergraduates, Giles and Cairns (1996) and Giles and colleagues (2004) found that the TPB measures accounted for 61% and 72% of variance in donation intentions, respectively. Similarly, Armitage and Conner (2001b) reported that the model accounted for 68% of the variance in donation intentions among people attending a university open day and 67% among undergraduates. Among an exclusive sample of non-donors, Lemmens and colleagues (2005) found that the model was less predictive, accounting for 31% of the variance in blood donation intentions. Blood donation intentions, in turn, account for 54-56% of variance in blood donation across studies demonstrating that while other factors determine intentions, intentions are a good indicator of actual donation (Armitage & Conner, 2001b; Giles & Cairns, 1996).

A number of studies have extended the TPB when applying it to blood donation. For example, intentions may be shaped by a sense of moral obligation (Parker, Manstead, & Stradling, 1995) and both Armitage and Conner (2001b) and Lemmens and colleagues (2005) found that moral norm increased the predictive power of the TPB in the context of blood donation.

Fishbein and Ajzen (1975) acknowledged that the Theory of Reasoned Action, the predecessor of the TPB, treated affect as an undifferentiated aspect of attitude formation and it has been argued that the model underestimates the impact of awareness of future affective outcomes on decision-making (see Van der Pligt, Zeelenberg, Van Dijk, De Vries, & Richard, 1998, for a review). Yet the evidence for including a measure of anticipated

affect in the context of blood donation is mixed; Godin, Sheeran, Conner, Germain, Blondeau, Gagné, Beaulieu, and Naccache (2005) found that anticipated regret was one of the major predictors of intention, while Lemmens and colleagues (2005) found no effect for including a measure of anticipated affect.

Further extensions of the model: Descriptive norm and affective expectations

Conner and Sparks (2005) summarised evidence indicating that each of the TPB constructs should be measured using two components. Attitudes may consist of affective and cognitive outcome expectancies that impact differently on intentions (Trafimow & Sheeran, 1998; Trafimow, Sheeran, Lombardo, Finlay, Brown, & Armitage, 2004). For example, how one thinks one will feel after donating blood may affect decisions to donate independently of one's assessment of the costs in terms of time or discomfort. In support of this view, Breckler and Wiggins (1989) and Farley and Stasson (2003) found that affective aspects of attitude were more strongly related to blood donation than cognitive aspects and Giles and Cairns (1995) and Godin and colleagues (2005) showed that only the affective attitudinal beliefs differed between the blood donors and non-donors.

In addition to subjective norms, intentions may be influenced by perceptions that others are performing the target behaviour, that is, by a descriptive norm (Rivis & Sheeran, 2003; Godin et al., 2005). For example, a study by Sheeran and Orbell (1999) showed that subjective and descriptive norms are distinctive constructs in a series of studies focusing on playing the lottery.

Page, Bennet, Carter, Smith, and Woodmore (1997) suggested that fear of blood and/or needles may negatively influence donation attitudes and intentions. Studies among non-donors have shown that fear was often mentioned as a reason for non-donation (e.g., Piliavin & Callero, 1991; Piliavin & Charng, 1990). For example, a study of Canadian students showed that non-donors reported fear (including fear of needles, the sight of blood, and concern about pain, bruising, and adverse reactions) most frequently as the reason they had not donated (Hupfer, Taylor, & Letwin, 2005). Similarly, among non-donors in Saudi Arabia, 6.7% reported that they did not donate due to fear of needles/donation (Alam & Masalmeh, 2004). Although fear is related to anticipated affective outcomes the strongly emotional content of fear perceptions may mean they have independent effects on donation decisions over and above anticipated affective outcomes.

Altruism

Several studies have found that donors mentioned altruistic reasons for donating blood (Glynn et al., 2002; Healy, 2000; Misje, Bosnes, Gåsdal, & Heier, 2005; Suárez, Fernández-Montoya, Fernández, López-Berrio, & Cillero-Peñuela, 2004), although the evidence is not consistent (Piliavin, 1990). Altruism is a general dispositional characteristic defined as helping out of the desire to benefit someone else, with no explicit benefit (and often costs) to oneself (Batson & Powell, 2003; Dovidio, Piliavin, Schroeder & Penner, 2006). Altruism has not been included in extended TPB models and it would be interesting to discover whether it has an independent impact on donation intentions or affects motivation indirectly through donation-specific cognitions.

The demographics of blood donation

Early studies of typical blood donors suggested that donor pools were largely male with percentages as high as 70-85% (Leibrecht, Hogan, Luz, & Tobias, 1976; Oswalt, 1977; Piliavin & Callero, 1991). These studies described a typical blood donor as a white male, aged between 30-40 years old with some college or technical training and more likely to be in a white collar job (Felts & Glascoff, 1990; Moore, 1991; Piliavin, 1990; Piliavin & Callero, 1991). In more recent studies, gender differences decreased with the proportion of male donors ranging between 50-53% (Mikkelsen, 2004; Misje et al., 2005; Tscheulin & Lindenmeier, 2005; Wu, Glynn, Schreiber, Wright, Lo, Murphy, Kleinman, & Garratty, 2001). Donors still tend to be better educated and better paid (Healy, 2000; Mikkelsen, 2004; Tscheulin & Lindenmeier, 2005) but the age distribution of donors more closely resembles that of the general population, although some studies show that the youngest (18-25 years) and oldest (56-65 years) age groups tend to be underrepresented (e.g., Misje et al., 2005). Characteristics of the Dutch donor population have followed these trends (e.g., currently 52% male with a mean age of 46 years) but new Dutch donors tend to be female and somewhat younger (30% male with a mean age of 40; Sanquin Blood Bank Database, 2007).

The present studies

We sought to test a model of blood donation intention among non-donors in the Netherlands. In light of recent research, we extended the well-supported TPB model by measuring the perceived prevalence of blood donating behaviour as a measure of descriptive norm as well as subjective norm and adding moral norm. We also distinguished between cognitive and affective attitude components, and we included fear of blood and needles and a range of specific anticipated affective reactions to blood donation. In addition, we added a measure of altruism. We did not include donor self-identity. Since self-identity as blood donor develops with continued donations, acquisition of friends through donation, expectations of future donation and descriptions of the self as a donor (Piliavin & Callero, 1991), it is unlikely to be a key component of motivation among non-donors. Our model included self-efficacy, rather than PBC, because the former has been found to be a stronger correlate of blood donation motivation (Armitage & Conner, 2001b; Giles et al., 2004). Finally, although we did not expect knowledge to be an additional predictor of donation intentions we included knowledge in our models because it is often targeted in health promotion materials and could, arguably, be an important correlate of blood donation motivation.

Many tests of blood donation models have employed student samples. We wished to explore whether motivational models would remain stable across groups varying in age and educational status. Consequently, we sampled older students (with a similar gender composition and mean age to new Dutch donors) as well as younger less well educated people in two tests of the model.

Study 1

A survey was conducted among older Dutch university students to test the model described above.

Method

Participants and procedure

Distance-learning students enrolled in psychology courses at the Open University of

the Netherlands were sent an email invitation to participate in an on-line survey. The invitation explained that we were interested in the views of donors and non-donors about blood donation. Anonymity was assured (because email addresses were not linked to individual data). Contact details (phone numbers and email addresses of the researchers) were provided, and recipients were informed that questionnaire completion would take no more than 20 minutes. Two general email reminders were sent to all participants over the following two weeks, thanking the participants who had already completed the questionnaire and asking the others to do so. Filters were used to prohibit multiple responses from the same IP address.

In total 1,872 students (74% female) were invited to participate in the study and 455 (24%) completed the survey. Respondents who were ineligible to donate ($N = 122$), who were blood donors or ex-donors at the time of the study ($Ns = 52$ and 70 , respectively) were not included in the analysis, resulting in a final sample of 246 eligible non-donors. Of these, most were female ($N = 185$, 75%), employed ($N = 201$, 82%), and had a partner ($N = 194$, 79%). Ages ranged from 19 to 66 years ($M = 37.1$). Less than one-third ($N = 65$, 26%) did voluntary work, with this group spending, on average, 14 hours per week on such work.

Measures

Measures were based on published measures (Armitage & Conner, 2001b; Giles & Cairns, 1995; Giles et al., 2004; Lemmens et al., 2005; Nickell, 1998; Page et al., 1997). Apart from questions concerning gender, date of birth, blood donation status, relationship status, employment, and weekly hours of volunteer work, measures were based on Likert-type items with 7 response options, ranging from 1 = *completely agree* to 7 = *completely disagree*. For each measure, scores on separate items that showed sufficient internal consistency (Cronbach's alpha $\alpha > .70$) were averaged into a single index. Higher scores represent more positive views towards donation.

Blood donation status. Respondents were asked to indicate their blood donation status by selecting one of 12 statements: 'I have never thought of giving blood myself'; 'I have given some thought to giving blood'; 'I have seriously considered giving blood'; 'I have applied for information'; 'I am considering registering for blood donation this year'; 'I am considering registering for blood donation this month'; 'I have recently registered

for blood donation'; 'I am a blood donor'; 'I am a blood donor, but I am considering withdrawing my registration'; 'I am temporarily deferred for blood donation'; 'I am permanently deferred for blood donation'; and 'I used to be a blood donor, but I have resigned'.

Intention. Three items measured the intention to become a blood donor ($\alpha = 0.93$; e.g., 'do you intend to give blood in the next months?').

Self-efficacy. Seven items measuring perceived self-efficacy were included ($\alpha = 0.70$; e.g., 'if I wanted to donate blood, I could easily do so in the next months', and 'if I wanted to donate blood, I could cope with any tension or nervousness associated with blood donation').

Attitude. A six item semantic differential was used to measure the cognitive component of attitude (i.e., 'egoistic-socially minded', 'rewarding-not rewarding', 'good-bad', 'risky-safe', 'worthwhile-not worthwhile', and 'wise-foolish'; $\alpha = 0.74$). Four bipolar statements indexed the affective component (i.e., 'pleasant-unpleasant', 'annoying-enjoyable', 'frightening-not frightening', and 'reassuring-not reassuring'; $\alpha = 0.79$). A factor analysis of all attitude items confirmed these two factors (Eigenvalue Factor 1 = 3.6 and Eigenvalue Factor 2 = 1.9). The two factors explained 55.1% of the variance.

Norms. Subjective norm (3 items, $\alpha = 0.92$; e.g., 'my friends think I should donate blood'), number of blood donating people in the social environment as an indicator of descriptive norm (single item, i.e., 'how many blood donors do you know?'), and moral norm (4 items, $\alpha = 0.82$, e.g., 'I feel a personal responsibility to give blood') were assessed. A factor analysis of all norm items confirmed three factors (Eigenvalue factor 1 = 3.8, factor loadings subjective norm items: .88-.93, other items: .05-.22; Eigenvalue factor 2 = 1.5, factor loadings moral norm items: .74-.88, other items: .08-.20 Eigenvalue factor 3 = 1.0, factor loading descriptive norm item = .99, other items: -.03-.07). The three factors explained 79.8% of the variance.

Anticipated Affect. Five items measured anticipated affect. All assessed how respondents would feel after they had donated blood ($\alpha = 0.79$, e.g., 'pride - no pride', 'relieved - tense', and 'satisfied - dissatisfied').

Knowledge. Knowledge about the blood bank and blood donation was assessed using 14 true-false questions (e.g. 'a short medical examination is required before each

blood donation', and 'the blood bank is only interested in uncommon blood groups, like AB and B'). Participants were asked not to guess if they were unsure, but to select the 'don't know' response. Correct answers scored +1 point, incorrect answers scored -1 and 'don't know' responses scored zero, resulting in a possible range of -14 to +14.

Altruism. We identified 7 altruism measures through searches of PubMed and Psycinfo: the self-reported altruism scale (SRA; Rushton, Chrisjohn, & Fekken 1981), the helping attitude scale (HAS; Nickell, 1998), the prosocial personality battery (PPB; Penner, 2002), the altruism scale for adults (ASA; Lee, Lee, & Kang, 2003), altruism statements from the Norm Activation Model (NAM; Cooper, Poe, & Bateman, 1999), the measure for social value orientation (SVO; Van Lange, Otten, De Bruin, & Joireman, 1997), and the values subscale of the motivation questionnaire (MV; Omoto & Snyder, 1995).

The ASA was only available in Korean. The other 6 measures as well as measures of attitudes towards donation and intention to donate were administered to 57 Open University students. Results showed that all altruism measures except SVO showed sufficient internal reliability (α 's = .73 - .83). Since neither the SRA nor PPB correlated with intention to donate blood ($r = .02$ and $r = .01$, respectively), these indices were excluded from further analyses. The remaining three measures showed comparable correlations with intention to donate (HAS, $r = .19$; MV, $r = .23$; NAM, $r = .21$) and strong correlations with attitude towards donation (HAS, $r = .60$; MV, $r = .63$; NAM, $r = .40$). The MV scale was originally designed to measure motivation to undertake general volunteering. It has been noted that blood donation differs in key aspects from regular volunteering, as is seen in the absence of correlation between volunteering and blood donation ($r = -.004$) across a number of European countries (Healy, 2000) and was confirmed in the weak correlation between volunteering and blood donation ($r = -.05$) in our own pilot study. Consequently, because of the relatively strong correlation between the HAS and blood donation intentions and attitudes and because of the greater face validity of the measure compared with the MV scale we selected the former as our measure of altruism (see Dehing-Oberije, 2004 for details).

Further analyses were undertaken to reduce the number of items of the HAS. Items showing a notably non-normal distribution were dropped, leaving 11 5-point Likert-type items with response options ranging from 'totally agree' to 'totally disagree'. ($\alpha =$

0.69; e.g., 'Voluntarily helping someone else is very rewarding', 'Helping those in need, is a good deed', and 'I feel proud when I know that my generosity has benefited a needy person'). The correlation between the original 20-item HAS and our reduced 11-item version was high ($r = .89$).

Results

A majority of the 246 eligible non-donors ($N = 155$, 63%) had never considered blood donation or had considered it only once, 83 (34%) had seriously considered blood donation or had applied for information and 8 (3%) had considered registering as a donor within one year. Engaging in volunteer work was correlated at $r = -.03$, ns, with blood donation status and at $r = -.02$, ns, with intention to donate blood.

Means, standard deviations and correlations between study measures are shown in Table 3.1 (combined for study 1 and 2). Participants had a positive cognitive attitude towards blood donation and moderately positive self-efficacy regarding blood donation. Affective attitude, subjective norm, and moral norm were moderately negative and the intention to become a blood donor was relatively low. Participants' knowledge about blood donation was poor. Correlations with intention ranged from .07 and .20 for knowledge and altruism to .39 and .53 for moral norm and affective attitude. Interestingly, affective attitude was much more strongly associated with intention than measures of anticipated affect and cognitive attitude (.53 versus .25 and .36, respectively).

Hierarchical multiple regression was used to explore relationships between significant univariate correlates of intention. Table 3.2 shows standardized regression coefficients (betas), F s, cumulative R^2 and R^2 change statistics for each step. Self-efficacy alone accounted for 15% of the variance in donation intentions. Adding cognitive attitude accounted for an additional 7% and affective attitude contributed a further 12%. Subjective norm and descriptive norm accounted for 5% and 4% of unique variance, respectively. Thus, TPB measures accounted for 42% of the variance in donation intentions. Moral norm accounted for a further 4% of variance but anticipated affect and altruism did not contribute to the final equation. In total 46% of the variance was accounted for by the extended TPB model with affective attitude, subjective norm, descriptive norm, and moral norm remaining significant in the final equation.

Table 3.1. Correlates of blood donation intentions for Study 1 (below the diagonal; $N = 246$) and Study 2 (above the diagonal; $N = 678$)

	1	2	3	4	5	6	7	8	9	10	11
1. Intention	0.94 ^f	.16 ^c	.50 ^c	.36 ^c	.22 ^c	.44 ^c	.46 ^c	.29 ^c	.08 ^a	.12 ^c	-.25 ^c
2. Cognitive attitude	.32 ^c	0.76 ^f	.15 ^c	.03	.17 ^c	.31 ^c	.26 ^c	.52 ^c	.15 ^c	.46 ^c	.03
3. Affective attitude	.53 ^c	.22 ^c	0.76 ^f	.27 ^c	.10 ^a	.52 ^c	.28 ^c	.26 ^c	.10 ^b	.05	-.43 ^c
4. Subjective norm	.36 ^c	.25 ^c	.21 ^b	0.96 ^f	.19 ^c	.23 ^c	.43 ^c	.09 ^a	.02	.05	-.03
5. Descriptive norm	.25 ^c	.09	-.01	.17 ^b	-	.19 ^c	.24 ^c	.12 ^b	.15 ^c	.20 ^c	.01
6. Self-efficacy	.38 ^c	.19 ^b	.57 ^c	.10	.07	0.74 ^f	.29 ^c	.34 ^c	.08 ^a	.21 ^c	-.37 ^c
7. Moral norm	.39 ^c	.38 ^c	.12	.43 ^c	.14 ^a	.05	0.88 ^f	.34 ^c	.12 ^c	.23 ^c	-.05
8. Anticipated affect	.25 ^c	.49 ^c	.18 ^b	.05	-.03	.21 ^b	.27 ^c	0.79 ^f	.08 ^a	.38 ^b	.13 ^c
9. Knowledge	.07	.03	.03	.02	.16 ^a	.06	-.01	-.05	-	.12 ^b	-.01
10. Altruism	.20 ^b	.44 ^c	.11	.17 ^b	-.02	.07	.27 ^c	.42 ^c	-.00	0.82 ^f	.07
11. Blood/needle fear	-	-	-	-	-	-	-	-	-	-	-
Study 1: mean ²	2.75	5.78	3.54	3.04	1.92	4.96	3.50	4.90	2.60	4.08	-
Study 1: standard dev.	1.44	0.77	1.31	1.38	2.11	0.97	1.44	0.92	2.06	0.47	-
Study 2: mean ²	2.72	5.43	3.39	3.02	1.40	4.60	3.63	5.09	2.98	5.39	1.20
Study 2: standard dev.	1.42	1.14	0.81	1.38	1.72	0.93	1.50	0.93	1.63	2.40	0.83

^a $p < .05$ ^b $p < .01$ ^c $p < .001$ ^f Cronbach's alpha study 2² Ranges 1 – 7, apart from knowledge (-14;14), descriptive norm (open-ended), and blood/needle fear (0;17)Table 3.2. Hierarchical regression of intention on extended TPB measures (Study 1, $N = 246$ older students)

Step / Variable entered	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta
Self-efficacy	.38***		.33***	.10	.11	.09	.10	.09	.10	.10
Cognitive attitude		.26***	.21***	.16**	.16**	.15**	.08	.05	.04	.04
Affective attitude			.42***	.38***	.38***	.40***	.40***	.40***	.40***	.40***
Subjective norm				.23***	.23***	.20***	.12*	.13*	.13*	.13*
Descriptive norm					.20***	.20***	.19***	.19***	.19***	.19***
Moral norm							.22***	.21***	.21***	.21***
Anticipated affect								.08	.07	.07
Altruism									.02	.02
R ²	.15	.21	.33	.38	.38	.42	.45	.46	.46	.46
R ² change	.15	.07	.12	.05	.05	.04	.04	.00	.00	.00
F change	41.62***	19.98***	42.38***	19.28***	19.28***	15.46***	16.02***	1.76	.19	.19

* $p < .05$, ** $p < .01$, *** $p < .001$

To explore whether altruism had an indirect effect on intention we conducted mediation analyses. According to Baron and Kenny (1986), mediation can be said to occur when four conditions are satisfied: (1) variation in the independent measure (e.g., altruism) accounts for significant variance in the dependent measure (e.g., intention); (2) variation in the independent measure accounts for significant variance in the mediator (e.g., moral norm); (3) variation in the mediator accounts for variance in the dependent measure while controlling for the influence of the independent measure; and (4) the significant effect of the independent measure on the dependent measure is significantly reduced after controlling for the effects of the mediator. Conditions 2 and 3 together imply condition 4. However, following MacKinnon, Lockwood, Hoffman, West, and Sheets (2002) we note that testing condition 1 may suffer from low power if there is complete mediation, that is, if the entire effect of altruism on intention is mediated by moral norm. According to McKinnon et al. (2002), joint significance of the effects of altruism on the mediator, and of the mediator on intention, is sufficient to establish mediation. So conditions 2 and 3 are of primary interest here.

The correlation matrix (Table 3.1) shows that altruism is significantly correlated with cognitive attitude, moral norm, and anticipated affect but, of these, only moral norm remained significant in the regression equation predicting intention (Table 3.2). Regression analyses showed (1) an effect of altruism on intention, $B = 0.61$, $t(246) = 3.16$, $p < .01$, (2) an effect of altruism on moral norm, $B = 0.82$, $t(246) = 4.37$, $p < .001$; (3) an effect of moral norm on intention, $B = 0.36$, $t(246) = 5.87$, $p < .001$; and (4) the effect of altruism on intention was reduced by almost 50%, $B = 0.31$, $t(246) = 1.67$, $p = .09$, after including moral norm as additional predictor. This mediation effect was statistically significant, Sobel's $Z = 3.47$, $p < .05$, see Figure 3.1a (Kenny, Kashy, & Bolger, 1998).

Discussion

In general, this sample of educated non-donors was poorly informed about blood donation but knowledge was a weak correlate of intentions to donate. Nearly two thirds of the sample had never seriously considered blood donation.

The results of our studies support the idea that an extended TPB provides a good model for the identification of the correlates of blood donating intention, accounting for 42% of the variance. It is noteworthy, however, that it was affective attitude (and not

A. Mediation of altruism by moral norm (study 1)

B. Mediation of altruism by moral norm (study 2)

C. Mediation of blood/needle fear by affective attitude and self-efficacy (study 2)

Figure 3.1. Schematic representations of the mediation analyses

Note. Unstandardized regression coefficients (B) are reported.

** $p < .01$, *** $p < .001$

cognitive attitude) which was strongly associated with intention, endorsing the value of using separate measures. Subjective and moral norm added to the variance accounted for, confirming previous findings indicating that these measures are useful, potentially - modifiable correlates of blood donation intentions (e.g., Armitage & Conner, 2001b; Giles & Cairns, 1995; Giles et al., 2004; Lemmens et al., 2005). In addition, the measure of the descriptive norm asking about the respondents' perception of the prevalence of donation added to the predictive utility of the model (e.g. Sheeran & Orbell, 1999). Altruism did not add to the predictive quality of the model but had an indirect effect on intention through moral norm. This suggests that altruism is better conceived of as a distal variable related to donation cognitions rather than to donation directly. Being altruistic leads to stronger moral norms regarding donation. This, in turn, motivates donation.

Self-efficacy accounted for almost 15% of blood donation intentions, but when affective attitude was entered in the model, the contribution of self-efficacy was reduced to non-significance. The mean donation self-efficacy score was fairly high suggesting that perceived feasibility is generally not a limiting factor of donation motivation among this group (Madden, Ellen, & Ajzen, 1992). Nonetheless, the high correlation between self-efficacy and affective attitude suggests that these measures share common variance (see also Armitage & Conner, 2001b; Giles et al., 2004) and that donation self-efficacy can be undermined by anticipation of negative emotional reactions to donation.

A limitation of this study is the low response rate. The use of mass emails to recruit respondents meant that only 24% of the targeted students responded to the survey. However, males and females were equally likely to respond to the email, and our respondents were representative of new Dutch donors in terms of gender composition and age.

Study 2

A second web-based survey was conducted to (i) test the replicability of study 1 results and (ii) test the generalisability of these findings to less-well educated samples of the population. Such generalisability is especially interesting because less well educated people are underrepresented among Dutch donors and could potentially become a new target group for recruitment. In addition, this study tested whether fear of needles and blood adds to the predictive capacity of affective attitudes towards blood donation intentions.

Method

Participants and procedure

An internet research agency was employed to access a random sample of young people who had no experience of higher education and had intermediate vocational qualifications at best. Eligible participants (69% female) received an email invitation similar to Study 1. Of the 1,002 invitations sent, 823 (82%) participants completed the questionnaire. Respondents who were donors or ex-donors at the time of the study ($N_s = 86$ and 8 , respectively) or who were ineligible to donate ($N = 51$) were excluded from the analyses, resulting in a sample of 678 participants. The majority of this sample were female ($N = 459$, 68%) and employed ($N = 483$, 71%). Ages ranged from 18 to 30 years ($M = 23.1$) and one-fifth ($N = 140$, 21%) did voluntary work, spending an average 12 hours per week on such work.

Measures

Measures were identical to those used in Study 1 with two exceptions. The subjective norm measure was expanded and a measure of fear of blood and needles was added. Cronbach's alphas for all measures are shown in Table 3.1.

Attitude was measured using the same items as in Study 1. A factor analysis again confirmed the distinction between cognitive and affective items (Eigenvalue Factor 1 = 3.0 and Eigenvalue Factor 2 = 2.4; both factors together explained 53.3% of variance).

Subjective Norm. Generally, the approval of family has more impact on young adults than on older ones. Moreover, for young adults in full-time jobs, colleagues may also be important social referents. We, therefore, added two items assessing the approval of family and colleagues (e.g., 'my colleagues would like me to donate blood') to the subjective norm items used in Study 1. This 5-item scale was reliable ($\alpha = 0.96$). A factor analysis of all norm items (including descriptive and moral norm items) confirmed three factors (Eigenvalue factor 1 = 5.5, factor loadings subjective norm items: .87-.94, other items: .08-.20; Eigenvalue factor 2 = 2.1, factor loadings moral norm items: .78-.89, other items: .15-.23; and Eigenvalue factor 3 = 1.0, factor loading descriptive norm: .98, other items: .00-.10; all factors together explained 86.0% of variance) corresponding to the theoretical derivation of the items.

Fear of blood and/or needles was measured with the blood-injection symptom scale (BISS; Page et al., 1997). Participants were instructed to remember the last time they gave blood (for a blood sample) or received an injection and mark which symptom(s) they had experienced (17 symptoms, range 0 - 17; e.g., 'tightness', 'anxiety', 'cold or clammy hands', 'dizzy or light-headed').

Results

Of the 678 eligible non-donors, a majority ($N = 525$, 77%) had never considered blood donation or had considered it only once; 137 participants (20 %) had seriously considered blood donation or had applied for information and 16 (2%) considered registering within the coming year. Engaging in volunteer work was correlated at $r = -.03$, ns, with blood donation status and at $r = -.06$, ns, with intention to donate blood.

Means, standard deviations, and correlations between study measures are shown in Table 3.1. Participants had a moderately positive cognitive attitude, self-efficacy, and anticipated affect regarding blood donation. Affective attitude, subjective norm, and moral norm were moderately negative and the intention to become a blood donor was relatively low. Participants' knowledge about blood donation was poor. Correlations with intention ranged from .08 and .12 for knowledge and altruism to .46 and .50 for moral norm and affective attitude. Interestingly, affective attitude was much more strongly associated with intention (.50) than the measures of anticipated affect, fear of blood and needles or the cognitive attitude measure (.29, -.25 and .16, respectively).

Hierarchical multiple regression was employed to explore the relationships between significant univariate correlates of the intention to donate blood. Table 3.3 shows standardized regression coefficients (betas), F 's, cumulative R^2 , and R^2 change statistics for each step. Self-efficacy alone accounted for 19% of the variance in donation intentions. Adding cognitive attitude did not account for additional variance but affective attitude contributed an additional 11%. Subjective norm and descriptive norm accounted for an additional 4% and 1% of unique variance, respectively. Thus, the TPB measures collectively accounted for 35% of the variance in donation intentions. Moral norm accounted for a further 5% of variance, anticipated affect added 0.4%. Altruism, blood/needle fear, and knowledge did not contribute to the final equation, resulting in a total variance accounted for of 41%. These findings mirror those of Study 1 but, for this sample, self-efficacy was also included in the final equation.

Table 3.3. Hierarchical regression of intention on extended TPB measures (Study 2, $N = 678$)

Step / Variable entered	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta
Self-efficacy	.44***	.43***	.23***	.20***	.19***	.17***	.16***	.16***	.14***	.14***	.14***
Cognitive attitude		.03	.03	.04	.03	-.02	-.06	-.05	-.05	-.05	-.05
Affective attitude			.38***	.34***	.34***	.31***	.30***	.30***	.28***	.29***	.29***
Subjective norm				.22***	.20***	.11**	.11**	.11**	.12**	.12**	.12**
Descriptive norm					.11**	.08*	.08*	.08*	.08**	.08**	.08**
Moral norm						.27***	.26***	.26***	.26***	.26***	.26***
Anticipated affect							.08*	.08*	.08	.08	.08*
Altruism								-.01	-.01	-.01	-.01
Blood/needle fear									-.05	-.05	-.05
Knowledge											-.00
R^2	.19	.19	.30	.34	.35	.41	.41	.41	.41	.41	.41
R^2 change	.19	.00	.11	.04	.01	.05	.00	.00	.00	.00	.00
F change	157.94***	.59	101.03***	44.95***	10.79**	61.21***	4.75*	.17	2.27	.02	.02

* $p < .05$, ** $p < .01$, *** $p < .001$

We conducted mediation analyses to explore whether altruism had an indirect effect on intention. As in Study 1, altruism was highly correlated with cognitive attitude ($r = .46$), moral norm ($r = .23$), and anticipated affect ($r = .38$). Of these variables, only moral norm was included in the final regression model. Regression analyses showed (1) an effect of altruism on intention, $B = 0.21$, $t(677) = 3.22$, $p < .001$, (2) an effect of altruism on moral norm, $B = 0.42$, $t(677) = 6.26$, $p < .001$; (3) an effect of moral norm on intention, $B = 0.44$, $t(677) = 13.13$, $p < .001$, and (4), the effect of altruism on intention was no longer significant (85% reduction), $B = 0.03$, $t(677) = 0.43$, $p = .67$, after including moral norm as additional predictor. This mediation effect was statistically significant, Sobel's $Z = 5.63$, $p < .001$, see Figure 3.1b (Kenny et al., 1998).

We also explored whether fear of blood and/or needles had an indirect effect on intention. Fear was substantially negatively correlated with self-efficacy ($r = -.37$) and affective attitude ($r = -.43$), which are both included in the final regression model. Following Kenny and colleagues's (1998) procedures for testing two mediators, regression analyses showed (1) an effect of blood/needle fear on intention, $B = -1.60$, $t(677) = -6.73$, $p < .01$, (2) an effect of blood/needle fear on both affective attitude, $B = -2.19$, $t(677) = -12.28$, $p < .001$, and self-efficacy, $B = -1.52$, $t(677) = -10.19$, $p < .001$; (3) an effect of both affective attitude, $B = 0.47$, $t(677) = 10.05$, $p < .001$ and self-efficacy, $B = 0.37$, $t(677) = 6.32$, $p < .001$ on intention, and (4) the effect of blood/needle fear on intention was almost fully mediated, $B = -0.01$, $t(677) = .23$, $p = .96$, after including affective attitude and self-efficacy as additional predictors. The mediation was significant for both affective attitude, Sobel's $Z = -7.76$, $p < .001$, and self-efficacy, Sobel's $Z = -5.34$, $p < .001$, see Figure 3.1c.

Discussion

This sample of non-donors was poorly informed about blood donation as were the older, better educated sample in Study 1. More than three quarters had never seriously considered blood donation.

The extended TPB provided a good model of correlates of intention accounting for 41% of the variance in non-donors' intentions. As in Study 1, altruism did not add

to the model and had only an indirect effect on intention through moral norm. Perhaps surprisingly, blood/needle fear only had an indirect effect on intention through affective attitude and self-efficacy. Nonetheless, the strong association between affective attitude, self-efficacy, and intention and between blood/needle fear and affective attitude suggests that the anticipation of unpleasantness, pain, and fear may undermine donation self-efficacy and motivation.

In line with previous studies, this study showed that experiencing approval from others (subjective norm), knowing other blood donors (descriptive norm), and experiencing a moral obligation (moral norm) all facilitate blood donor intentions. As in Study 1, self-efficacy was moderately correlated with intentions to donate but in this study self-efficacy has an additional effect. It is unclear whether this indicates that self-efficacy enhancement in relation to donation is more important for younger, less well educated people.

General discussion

The findings support the utility of an extended Theory of Planned Behaviour model as a model of blood donation motivation (e.g., Armitage & Conner, 2001b; Giles et al., 2004; Lemmens et al., 2005). Our results extend previous research into blood donation motivation in four respects. First, our findings confirm the value of dividing attitude measures into affective and cognitive components, and they confirm that affective attitude measures are more strongly associated with intentions to donate than cognitive attitudes, fear of blood or needles, or other anticipated affective outcomes. Thus how people anticipate feeling about blood donation is a critical component of donation motivation. Second, the results confirm that descriptive norms predict intention indicating that perceptions that donation is common are likely to promote donation motivation. Third, our studies suggest that dispositional characteristics, that is, altruism (both studies) and general fear of blood/needles (study 2), are mediated by behaviour-specific cognitions. Thus, people's beliefs about donation are the key antecedents of donation motivation while personal traits are more distal determinants of such beliefs. Fourth, the stability of the core model of (i) affective attitude, (ii) descriptive norm, (iii) subjective norm, and (iv) moral norm across two samples indicates that this model may be applied across population sectors.

Knowledge was poor in both samples but the weak correlations with donation intentions suggests that while it is desirable to increase knowledge about donation more generally, this is unlikely to have an impact on donation motivation.

Overall then, the results suggest that messages persuading non-donors that (i) donation will prompt positive rather than negative feelings, (ii) others are donating, (iii) others approve of donating, and (iv) people have a moral obligation to donate, are likely to enhance donation motivation. Future research on blood donation recruitment needs to focus on the translation of these core intervention targets into specific theory-based behaviour change techniques (Abraham & Michie, 2008; Kok et al., 2004) and then pre-test and evaluate such techniques (Whittingham, Ruiter, Castermans, Huiberts, & Kok, 2008).

Our two studies used different sampling methods. In Study 1, Open University students received an unexpected invitation resulting in a low (24%) response rate. As with most student studies, this recruitment strategy raises questions regarding the generalisability to the findings to a wider population, although in this case the sample matched the current new donor population in terms of gender composition, age and education. It is important, therefore, that in the second study employing a different recruitment strategy (resulting in an 82% response rate) the core model of donation motivation antecedents was confirmed among young and less-well educated people (with the addition of self-efficacy). The second study not only clarifies the antecedents of donor motivation amongst a group which is underrepresented in donor populations but highlights the generalisability of the findings. It is worth noting too that in the Netherlands in 2001, 98% of the young adults aged between 18 and 24 had access to the internet and 89% of them used email communication (CBS, 2001). As internet use has only grown over the past 7 years, sampling bias should not arise for this age group because of internet recruitment.

To further explore the effects of education and age, we combined the two datasets for the constructs in the core model (affective attitude, subjective norm, descriptive norm, and moral norm) and self-efficacy. We conducted 8 post hoc moderated, hierarchical multiple regressions to test, separately, whether age and education multiplied by each of the 4 antecedents added to the variance accounted for in intention after controlling for the antecedent under test. Education level was indexed by the study sample, i.e., studying for a degree (Study 1 sample) versus intermediate vocational qualifications only (Study

2 sample). Mean centred multiplicative terms were employed. None of the interaction terms added to the variance accounted for by the antecedents themselves (Beta's ranged from -.05 and .04; Baron & Kenny, 1986). This strengthens the conclusion that the core model is generalisable across samples and indicates that self-efficacy enhancement should be regarded as a core intervention target, rather than only relevant to less privileged groups.

A final caveat is in order concerning our measure of altruism. Altruism is defined as helping someone else out of desire to benefit this other, without explicit benefit to oneself (Batson & Powell, 2003). In voluntary blood donation, blood donors receive no explicit reward, but they often report positive feelings after donation (e.g. experiencing a warm glow or feeling proud). These feelings can be seen as an indirect benefit of donating. The altruism scale we used in this study also included items referring to these positive feelings. Our findings thus suggest that motivations based on affective personal benefit play a role in blood donation behaviour (see also Ferguson, Farrell, & Lawrence, 2008).

In conclusion, the two studies undertaken in a country requiring donor registration (unlike the UK and US, but like Sweden, Belgium, and France,) supported and extended previous findings. In particular, they provide substantial support for a core list of intervention targets relevant to non-donors i.e., (i) perceived affective consequences of donation, (ii) descriptive norm, (iii) subjective norm, (iv) moral norm, and (v) self-efficacy. These results provide a foundation for the systematic design and evaluation of new recruitment campaigns.

Chapter 4

What messages are used in blood donor recruitment leaflets, and are they effective?

Manuscript in preparation: Lemmens, K. P. H., Abraham, C., Ruiter, R. A. C., Veldhuizen, I. J. T., Vos, C., & Schaalma, H. What messages are used in blood donor recruitment leaflets, and are they effective?

Abstract

New blood donors are constantly needed to be able to assure a sufficient supply of safe blood. Blood banks commonly rely on recruitment leaflets to recruit new blood donors. These leaflets have never been analyzed for their content and effectiveness. A content analysis was conducted to map the content of the two most recent recruitment leaflets. All instances of text were assigned to a coding category. Categories were either theory-based or common-sense categories. The content analysis was followed by an experiment to evaluate the effectiveness of the recruitment leaflets. The content analysis showed that both leaflets were mainly aimed at knowledge transfer, as 87% of the content could be assigned to the common-sense categories and only 13% to the theory-based categories. The experiment confirmed these results. Although blood banks mainly use leaflets to recruit new blood donors, these leaflets are aimed at knowledge transfer and not at recruitment. Reading a leaflet did increase knowledge about blood donation, but did not motivate to become blood donor.

Keywords: intervention, intention, blood donation, recruitment

Introduction

The maintenance of a safe national blood supply is enhanced by recruiting voluntary, non-remunerated donors. In the Netherlands, about 500,000 donors are needed annually to provide blood for medical procedures (Sanquin, 2007). Potential donors register with Sanquin Blood Bank. After a medical examination, eligible donors are invited to donate. Each year, about 10% of donors withdraw for personal reasons or because they do not meet the eligibility criteria. Consequently, continual donor recruitment is required. Leaflets play an important role in such recruitment in the Netherlands and elsewhere.

For recruitment leaflets to be effective, people need to attend to their content, understand that content, and be persuaded by it (McGuire, 1985). Once persuaded, motivated people need to recall that they have decided to register as a donor and prioritise this action over others. To motivate behaviour change successfully, leaflet content should target psychological determinants of motivation and action (Kok, Schaalma, De Vries, Parcel, & Paulussen, 1996) but few studies have examined the effectiveness of leaflets to generate such change (e.g., Hall, Bishop, & Marteau, 2003; Krahé, Abraham, & Scheinberger-Olwig, 2005).

Studies of the determinants of blood donation have used the Theory of Planned Behaviour (TPB; Ajzen, 1991) or extended versions (Armitage & Conner, 2001a) as theoretical framework. The TPB states that intention is the most proximal determinant of behaviour and that intention, in turn, is influenced by attitude, subjective norm, and perceived behavioural control. The model has often been extended with measures of descriptive and moral norm, distinguished between affective and cognitive attitude, and included measures of self-efficacy instead of perceived behavioural control. These studies, conducted among Dutch young adults (Lemmens, Abraham, Hoekstra, Ruiter, De Kort, Brug, & Schaalma, 2005; Lemmens, Abraham, Ruiter, Veldhuizen, Dehing-Oberije, Bos, & Schaalma, 2009) and international studies among a variety of populations (Armitage & Conner, 2001b; Giles & Cairns, 1995; Giles, McClenahan, Cairns, & Mallet, 2004; Godin, Sheeran, Conner, Germain, Blondeau, Gagné, Beaulieu, & Naccache, 2005;

McMahon & Byrne, 2008) showed that the most important determinants of blood donation intentions are: self-efficacy (perceived ability) to become a blood donor and donate blood (Armitage & Conner, 2001b; Giles et al., 2004; Lemmens et al., 2005; Lemmens et al., 2009), *affective attitude* (including fear, nervousness, and expected pain) towards blood donation (Armitage & Conner, 2001b; Giles & Cairns, 1995; Godin et al., 2005; Lemmens et al., 2005; Lemmens et al., 2009; McMahon & Byrne, 2008), and *moral norm* (feeling responsible) to contribute to the blood supply influence the intention to become a blood donor (Armitage & Conner, 2001b; Godin et al., 2005; Lemmens et al., 2005; Lemmens et al., 2009; McMahon & Byrne, 2008), as do *subjective norms* (Giles & Cairns, 1995; Giles et al., 2004; Lemmens et al., 2005; Lemmens et al., 2009; McMahon & Byrne, 2008) and *descriptive norms* regarding blood donation (Lemmens et al., 2009).

The present research had two aims: to examine the content of donor recruitment leaflets and to assess their effectiveness. The first study describes a content analysis of the current blood donor recruitment leaflets which investigates whether current leaflets target the determinants of donation identified by previous research. The second study employs an experimental design to evaluate the effectiveness of these leaflets in motivating people to register as a blood donor.

Study 1

Previous studies have examined the content of health promotion leaflets including those promoting condom use (Abraham, Krahé, Dominic, & Fritsche, 2002) and safe alcohol use (Abraham, Southby, Quandt, Krahé, & Van der Sluijs, 2007). However, to our knowledge, no previous analysis of the content of donor recruitment leaflets has been published.

To conduct a quantitative content analysis (Berelson, 1971; Holsti, 1969; Krippendorff, 1981; Stemler, 2001) we followed the Content Analysis Approach to Theory-Specified Persuasive Educational Communication (CAATSPEC) method used by Abraham and colleagues (Abraham et al., 2007). We anticipated that the messages in these leaflets would target the cognitions found to be associated with donation motivation in previous studies.

Method

Coding manual

We developed a coding manual that provided instructions on how to categorise a series of precisely defined leaflet features and messages. This allowed us to assess inter-coder reliability; that is the extent to which our categorisation of content could be replicated by independent coders. According to Krippendorff (1981), categories to be coded for need to be exhaustive and mutually exclusive. This means that all instances of text should be ascribed to a specific category and that instances of text cannot be ascribed to two categories simultaneously. To minimize the impact of punctuation, presentation, and sentence structure on frequency counts, we specified that two instances of the same category could not be counted consecutively, i.e., following a categorisation X, an instance of a different category had to be identified in the text before a new instance of category X could be counted (Abraham et al., 2007).

Nineteen message-type categories were defined. Following the CAATSPEC method, categories 1 to 6 were used to identify theory-based messages targeting determinants of blood donation intentions identified in previous research. Categories 1 and 2 were used to identify messages targeting *self-efficacy*. We distinguished between messages encouraging greater confidence and self-belief in registration as a blood donor (category 1) and those encouraging confidence and self belief in relation to giving blood (category 2). Category 3 was used to identify messages targeting *affective attitudes* by scoring statements aimed at reducing negative expectations of blood donation (e.g., pain, fear, and nervousness). Three categories were used to identify normative messages. Category 4 was used to identify messages highlighting approval from family and friends, that is, targeting *subjective norm*. Category 5 (*descriptive norm*) was used to identify messages that implied that others were donating blood and thereby providing role models for non-donors. Category 6 was used to identify messages targeting *moral norm*, that is, encouraging feelings of personal responsibility or obligation to contribute to the blood supply.

Categories 7 to 17 reflected other, mainly common-sense, messages. We developed these categories to ensure that all information in the leaflets could be coded for (Krippendorff, 1981).

Categories 7 and 8 were used to identify information regarding the blood bank (location and the official name 'Sanquin Blood Bank', respectively). Categories 9-12 were used to identify knowledge about the act of donating blood: the prerequisites to donation (category 9), explaining the registration procedure (category 10), explaining the donation procedure (category 11), and explaining the medical exam and blood tests (category 12). Categories 13-15 were used to identify messages about patients receiving blood (category 13), the importance of blood donation (category 14), and the need for blood (category 15). Category 16 was used to identify messages about the policy of the blood bank, including information clarifying that blood donation is voluntary and non-remunerated. Finally, category 17 was a miscellaneous category for text that could not be assigned to any of the other categories. Table 4.1 gives an overview of all categories, category descriptions, and example statements.

The coding manual was piloted by two authors (KL and CV) using two older recruitment leaflets (these leaflets were not available to the public anymore) which resulted in some minor changes in the coding manual.

Table 4.1. An overview of the categories included in the coding manual, brief definitions for each category, and an illustrative message for categories included in the leaflet

Category	Brief Definition	Illustrative message
1. Self-efficacy (promotion of registration)	Messages encouraging you to register with the blood bank and explaining how easy registration is	Do you want more information about donating blood? Call us
2. Self-efficacy (promotion of donation)	Messages encouraging you to donate blood and explaining the relative ease of donating blood	-
3. Affective attitude	Messages reducing the negative aspects of blood donation, such as expected pain, fear, nervousness and tension, etc.	We exclusively use sterile equipment, which is destroyed after usage. Thereby excluding infections

Category	Brief Definition	Illustrative message
4. Subjective norm	Messages about social pressure to donate blood, other people wanting you to donate, etc.	-
5. Descriptive norm (modelling)	Messages about other people who are already blood donors	-
6. Moral norm	Messages about a moral norm to give blood, a personal responsibility to contribute to the blood supply, etc.	Donating blood. You cannot do less
7. Location blood bank	Messages giving the locations of the blood banks	You can donate blood in the following cities: [list of cities]
8. Name 'Sanquin'	Messages using 'Sanquin Blood banks' to enlarge familiarity with the name Sanquin	Sanquin Blood Bank
9. Knowledge prerequisites donation	Messages describing the prerequisites that have to be fulfilled to donate, >50 kg, aged between 18 en 65 (70), no medicine, etc.	Everyone aged between 18 and 65 and weighing over 50 kg, can donate blood
10. Knowledge registration procedure	Messages explaining the registration procedure to become a blood donor	If you register as a new blood donor, you receive more information and an invitation for the medical exam
11. Knowledge of donation procedure	Messages explaining the donation procedure, including information about the amount of blood donated, time needed and procedure of donation	If you pass the medical exam, you can donate a pint of blood. This takes about 10 minutes
12. Knowledge medical exam and blood tests	Messages about the medical examination and blood tests carried out on the donor blood	Next, we test your HB-level and blood pressure
13. Patient in need of blood	Messages and examples of patients in need of blood or who have benefited from donor blood	Road victims, patients with leukaemia, or patients undergoing surgery
14. Importance of blood donation	Messages that donating blood can save lives, that it is important to donate, etc.	Give for life. Give blood
15. Need for blood	Messages describing future shortages, blood being used for transfusions and medicine	Every minute someone in our country needs blood
16. Knowledge about blood collection	Messages about the task of the blood bank and its organisation	The Blood Bank makes blood available in hospitals
17. Remaining	Messages that could not be assigned to any of the other categories	We process the blood into different products to help multiple patients

Theory-based and common-sense categories

Leaflets

The study focused on two leaflets. One circulated in the Netherlands at the time of the study and the second was a leaflet just about to be launched by the national blood bank and now in widespread circulation. These leaflets: 'Red Gold' (already in widespread usage) and 'For you just a minute, for me a lifetime' (not yet available to the public) are illustrated in Figure 4.1. Both leaflets included a donor registration form.

Figure 4.1, the 'Red Gold' leaflet (left) and the 'For you just a minute, for me a lifetime' leaflet (right)

The 'Red Gold' leaflet covered 2/3 of double-sided A4 sized paper folded in two. The front page showed a picture of a bright red blood bag, with some tubes on a red background. The slogan 'Red Gold' was printed in white over the picture, together with the subtitle 'Give for life – Give blood'. The phone number of the blood bank was mentioned at the bottom of the front page. The leaflet contained 380 words.

The 'For you just a minute' leaflet was a double-sided A4 sized paper folded in three. The front page was divided in a small upper and lower part, and a relatively large middle part. The upper part was white, included the Sanquin Blood Bank logo, and the slogan 'For you just a minute, for me a lifetime' in a dark red font. The middle part presented a portrait of a young woman, and the subtitle 'Giving blood. You cannot do less'. The lower part of the front page was dark red and stated 'Blood is life' in a small white font. The leaflet contained 569 words.

Results

Coding reliability

Two psychologists independently coded leaflets using the coding manual. Initial agreement was 63% for the 'Red gold' leaflet and 78% for the 'For you just a minute' leaflet. All disagreements were resolved by discussion.

Frequencies of message usage

Across the two leaflets we categorised 44 message types and 2 instances of miscellaneous text. These included 38 common-sense messages, 6 theory-based messages and 2 sections of text that could not be coded. Table 4.2 includes frequency counts of message types included in the two leaflets.

The leaflets primarily included information about the registration procedure (category 10) and the importance of blood donation (category 14), 14% of the information included in the leaflets referred to the registration procedure and another 14% to the importance of donation; 11% of the information included referred to knowledge about the medical examination and blood tests. Moral norm (category 6), the official name 'Sanquin Blood Bank' (category 8), and information about the donation procedure (category 11) were all mentioned in 9% of the leaflets' content.

Table 4.2. Overview of the categories scored in the content analysis

Category	'Red Gold'	'For you just a minute'	Total	
Knowledge registration procedure	3	3	6	13%
Importance of blood donation	4	2	6	13%
Knowledge medical exam and blood tests	2	3	5	11%
Moral norm	2	2	4	9%
Name 'Sanquin Blood Bank'	1	3	4	9%
Knowledge donation procedure	2	2	4	9%
Patients needing blood	2	1	3	7%
Need for blood	1	2	3	7%
Knowledge about blood collection	2	1	3	7%
Location blood bank	0	2	2	4%
Knowledge prerequisites to donate	1	1	2	4%
Miscellaneous category	1	1	2	4%
Affective attitude	0	1	1	2%
Self-efficacy (promotion of registration)	0	1	1	2%
Theory-based and common sense categories				

The location of the blood bank (category 7), knowledge about the prerequisites to donate (category 9), and the rest category (category 17) were all mentioned twice, covering 5% of the leaflets' content.

Only 3 of the 7 specified theory-based messages were identified across the two leaflets. Moral norm information was included in both leaflets. Self-efficacy to register and affective attitude both were mentioned once (2%) in the 'For you just a minute' leaflet. Thus of all coded text, only 13% targeted determinants identified in previous studies.

Discussion

The blood bank in the Netherlands commonly uses leaflets to recruit new blood donors. Previous research suggests that such leaflets should target self-efficacy, affective attitude, and subjective, descriptive, and moral norms to increase blood donation intentions. In fact, the 'Red gold' leaflet only targeted one of these determinants, that is 2 of 21

messages targeted moral norm. The soon-to-be-launched 'For you just a minute' leaflet targeted three of the research-recommended target cognitions, devoting 4 of 25 coded messages to promoting self-efficacy in relation to registration, positive affective attitudes toward donation, and moral norms. Much of the text in these leaflets was directed towards increasing knowledge rather than changing antecedents of donation motivation. Consequently, we expected that the leaflets would be successful in increasing knowledge, but would have little effect on the antecedents of donation motivation.

Study 2

In this study we tested the effectiveness of the two leaflets in relation to a no-leaflet control group in changing cognitions targeted by either leaflet. We predicted that the leaflets would be effective in changing those cognitions they targeted but that they would not change cognitions which were not targeted.

Methods

Participants and Design

Participants were 209 undergraduate students at Maastricht University. Students are an important target group for Sanquin Blood Bank, not only because they are generally in good health and have a long donor career ahead of them, but also because blood banks are often located in close proximity of universities. The majority of participants were female ($N = 127$, 61%), and students were enrolled in molecular life sciences ($N = 93$, 44%), cultural studies ($N = 48$, 23%), or law school ($N = 68$, 33%), approximately 75% of students invited participated in this study. The mean age was 20.1 years. Participants were randomly assigned to one of three conditions: reading the 'Red gold' leaflet, reading the 'For you just a minute' leaflet, or a no-leaflet control group.

Procedure

Students were invited to participate after a lecture. Participants in the two 'leaflet' conditions received an envelope including instructions, the leaflet and a questionnaire. These participants were instructed to read the leaflet and then complete the questionnaire.

Participants in the control condition received the same package without a leaflet. After questionnaire completion, all participants were invited to complete an application form to register as a blood donor. They were instructed that the application form could be placed in a provided envelope and would be sent to the blood bank without being opened by the researchers. Completed questionnaires were sealed in a separate envelope to guarantee anonymity. Questionnaire completion took about 10-12 minutes.

Table 4.3. Overview of study 2 measures, number of items, reliability level, and example question

Category	#	α / r	Illustrative item
Intention	3	$\alpha = .95$	'I intend to start donating blood'
Self-efficacy registration	1	-	'It is easy to register as a blood donor'
Affective attitude	3	$\alpha = .75$	'Donating blood is painful'
Moral norm	4	$\alpha = .85$	'I feel a moral obligation to donate blood'
Location blood bank	2	$r = .75$	'The blood bank has convenient locations to donate'
Name 'Sanquin'	2	$r = .53$	'I am familiar with the name 'Sanquin'
Knowledge prerequisites donation	2	True/false	'You are allowed to donate blood between the ages of 16 and 55'; false
Registration procedure	1	-	'I am well-informed about the registration procedure of Sanquin Blood Bank'
Knowledge donation procedure	3	True/false	'You always donate a pint of blood'; true
Knowledge medical exam and blood tests	2	True/false	'Before every donation, your blood is tested for HIV, Hepatitis, and Creutzfeld Jacob's Disease'; false
Patients in need of blood	1	-	'Many patients owe their lives to blood transfusion'
Importance of blood donation	3	$\alpha = .80$	'The availability of donor blood saves many lives annually'
Need for blood	3	$\alpha = .69$	'The need for blood will increase in the future'
Knowledge blood collection	3	True/false	'Blood is donated voluntarily and non-remunerated'; true

Theory-based and common sense categories

number of items included in the scale

The reliability of the scale is presented in correlations (r) for scales with 2 items and Cronbach's α for scales with 3 or more items

Knowledge questions were measured in a true/false format. Correct answers scored +1, incorrect answers -1, and 'I don't know' answers 0 points. Scores were summed to obtain the scale score.

Measures

Measures were designed to test the impact of messages found in the leaflets on corresponding cognitions, including those specified by previous research. Table 4.3 gives an overview of the measures used in this study, including the number of items per scale, the reliability of the scale, and an example question. In addition to cognitions corresponding to the coded message types we also measured intention to donate.

All items, except for socio-demographic and knowledge questions, used 7-point Likert scales (ranging from *totally agree* to *totally disagree*). These items were recoded in such a way that higher scores represented more positive views about blood donation. Socio-demographic questions (like gender and age) were asked using appropriate answer possibilities. Knowledge questions were formulated in a true/false/I don't know format. Participants scored +1 point for a correct answer, -1 point for an incorrect answer, and 0 points for an 'I don't know answer'. Participants were asked not to guess, but to mark the 'I don't know' response if they were unsure. To obtain a general measure, scores of individual questions were summed. These questions are referred to as true/false items in Table 4.3.

Results

SPSS 12.0.1 was used to analyze the data. Multivariate Analyses of Variance (MANOVA) were employed to analyze the differences between conditions across all measures. Univariate Analyses of Variance (ANOVA) were conducted to reveal the nature of these differences. Post hoc tests with Bonferroni correction were conducted to find differences among conditions.

A MANOVA on gender, age, blood donation status, and study discipline showed that the groups were comparable on these variables (Wilks' $\lambda = .98$; $F(8) = 0.41$; $p = .91$). A MANOVA on all categories revealed between-group differences (Wilks' $\lambda = .57$; $F(38) = 3.05$; $p < .001$).

Subsequent ANOVA's on the theory-based categories revealed a significant difference between the groups for self-efficacy to register (see Table 4.4 for the mean scores on the univariate measures). Participants who had read the 'For you just a minute' leaflet scored significantly higher on self-efficacy to register than control group participants. There were no differences between the groups for the other theory-based categories.

ANOVA's on the common-sense categories revealed differences for knowledge about the prerequisites for donation, knowledge of donation procedure, and knowledge of the medical exam and blood tests. Participants who had read the 'For you just a minute' leaflet and the 'Red Gold' leaflet better knew the prerequisites for donation than participants who had read no leaflet at all. Reading the 'For you just a minute' leaflet also significantly increased knowledge about the donation procedure and about the medical exam and blood tests, compared to both other groups.

Although intention to become a blood donor did not significantly differ between the groups, 10 participants used the possibility to register as a donor; 2 control group participants did so without reading a leaflet, 3 did so after reading the 'Red Gold' leaflet, and 5 after reading the 'For you just a minute' leaflet. However, these differences were not significant.

Table 4.4. Mean scores (SD) of study 2 measures per leaflet

Category	Control	'For you'	'Red gold'
Intention to become donor	3.25 (1.47)	3.72 (1.72)	3.48 (1.72)
Self-efficacy (promotion of registration)	4.52 ^a (1.72)	5.28 ^a (1.54)	5.00 (1.57)
Affective attitude	3.57 (1.23)	3.97 (1.27)	3.89 (1.45)
Moral norm	3.00 (1.43)	3.24 (1.39)	3.07 (1.37)
Location blood bank	4.52 (1.37)	4.72 (1.60)	4.46 (1.33)
Name 'Sanquin'	3.05 (2.23)	3.25 (1.95)	3.14 (2.11)
Knowledge prerequisites to donate*	0.71 ^{a,c} (.89)	1.61 ^{a,b} (.71)	1.03 ^{b,c} (.76)
Knowledge registration procedure	2.95 (1.83)	3.22 (2.08)	3.30 (1.92)
Knowledge of donation procedure*	0.32 ^c (1.05)	1.69 ^{b,c} (1.27)	0.31 ^b (1.17)
Knowledge medical exam and blood tests*	-0.12 ^c (.71)	0.38 ^{b,c} (.76)	-0.08 ^b (.77)
Patient in need of blood	6.00 (1.08)	5.94 (1.01)	5.99 (1.19)
Importance of blood donation	5.74 (.93)	5.88 (.92)	5.98 (.93)
Need for blood	4.55 (1.15)	4.89 (.96)	4.71 (1.03)
Knowledge about blood collection	1.35 (1.09)	1.75 (.96)	1.69 (.99)

* True/false questions, a correct answer = 1, wrong answer = -1, don't know = 0.

^a p < .05

^b p < .01

^c p < .01

Discussion

Both leaflets improved participants' knowledge. Participants reading a leaflet had more knowledge about the prerequisites to donate than control group participants. Reading the 'For you just a minute' leaflet also increased knowledge about the prerequisites to donate, the donation procedure, and the medical exam and blood tests compared to both the participants reading the 'Red Gold' leaflet and the control group. The leaflets did not raise knowledge about blood bank locations, the name 'Sanquin', knowledge about the registration procedure and blood collection, and beliefs about the importance of donation, the need for blood, and the patients in need.

Participants reading the 'For you just a minute' leaflet showed greater self-efficacy to register as a blood donor than control group participants, but neither leaflet had any effect on any of the other determinants of intentions to donate and, unsurprisingly, neither affected donor motivation, relative to the control group.

General discussion

The results show that the most commonly available blood donation recruitment leaflet in the Netherlands, 'Red Gold', included only two messages (among 21 messages identified in the leaflet) which targeted a research-based cognitive determinant of the intention to donate. Thus less than 10% of available text was devoted to targeting research-based determinants. Unsurprisingly, this leaflet had no effect on determinants of intention or on intention itself, suggesting the leaflet had little or no impact on recruitment. The soon-to be launched 'For you just a minute' leaflet included 4 (of 25) messages targeting research-based cognitive determinants of donation motivation, namely registration self-efficacy, affective attitudes, and moral norm. However, only registration self-efficacy was successfully promoted among leaflet readers in comparison with no-leaflet control group participants. Again, no significant changes in intentions to register were observed. Moreover, the somewhat higher number of people registering after reading the 'For you just a minute' leaflet was not significantly different from the control group. Nonetheless, while neither leaflet can be said to be research-based and neither proved to be effective, the somewhat greater theoretical basis of the 'For you just a minute' leaflet (and corresponding

trend towards greater effectiveness) illustrates how an evidence-based approach to leaflet design could potentially improve the effectiveness of donor recruitment leaflets.

Although these two leaflets were ineffective in promoting donor motivation they were not ineffective as persuasive devices. Both leaflets included a range of messages designed to increase knowledge about blood donation and both leaflets were effective (compared to no leaflet controls) in increasing knowledge regarding donation prerequisites, donation procedures, and medical procedures and blood tests preceding donation. Thus the leaflets mainly targeted knowledge about donation and successfully increased knowledge of key aspects of donation compared to the control group. In this sense they were effective in changing targeted cognitions. Unfortunately, knowledge has not been shown to be a good predictor of donation motivation (Lemmens et al., 2005). The failure of knowledge-targeted leaflets to change motivation may be especially likely among populations in which the importance of blood donation is accepted. In this study high means ($M = 5.98$, $M = 5.89$, $M = 5.74$) showed that most participants accepted the importance of blood donation.

It is interesting to notice the pictorial presentation of the two leaflets (see Figure 4.1). Research suggests that messages which reduce anticipated negative affect such as expectations of pain and fear for blood/needles should be effective in promoting donation motivation (Lemmens et al., 2005; Giles & Cairns, 1995). In this context, it is worth asking whether the influence of pictures such as a bright red blood bag on the 'Red gold' leaflet could be counter-productive? Further research of this kind reported here focusing on the pictorial content of leaflets and the impact of such content on motivation is warranted.

The results have clear implications for practice. First, leaflet designers should map cognition changes likely to bring about increased motivation to donate by drawing upon existing research and then design messages targeting these cognition changes (Bartholomew, Parcel, Kok, & Gottlieb, 2006). Second, leaflet designers should conduct elicitation research (Fisher & Fisher, 1991) to discover which of these cognitions is already established in the target population and which could be enhanced. For example, there is little point in educating potential donors about the details of donation if such knowledge is not associated with donation motivation and, similarly, there is little point in emphasizing the importance of donation if this is already accepted. In summary, an evidence-based

approach to the design of leaflet content is required. The present results suggest that such an approach could be effective because the leaflets studied here were effective in changing the cognitions they targeted. Unfortunately they did not target the determinants of donor motivation as identified by previous research.

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Chapter 5

**An intervention mapping approach to improving
the blood donor recruitment leaflets**

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Abstract

Blood banks often use leaflets to recruit new blood donors. A content analysis revealed that these leaflets are mainly aimed at knowledge transfer and not at recruitment, as information targeting the determinants of blood donation intentions (i.e. affective attitude, self-efficacy, and moral norm) is hardly included in the leaflets. Information targeting these determinants was included in an adapted version of the leaflet. The adapted version of the recruitment leaflet was compared to the standard version and a no-leaflet control group to evaluate the effectiveness of including determinant-relevant information. The results showed that participants who had read the adapted version of the leaflet had a more positive affective attitude (e.g. less expectations of pain and fear) than other participants. Participants who had read either the adapted or the standard version of the leaflet had more general self-efficacy to donate blood than control group participants. Intention to donate blood did not differ between conditions. Even though the adapted version of the recruitment leaflet increased affective attitude and general self-efficacy to donate blood, it did not successfully target specific self-efficacy to manage tension and nerves, self-efficacy to manage possible negative consequences, and moral norm to donate. Intention to donate was not affected either.

Keywords: intervention, intention, blood donation, recruitment

Introduction

At the moment, Sanquin, the Dutch blood bank, faces decreasing donor files. To continuously ensure a sufficient supply of safe blood, new donors need to be recruited (Sanquin, 2007). To improve donor recruitment, it is important to know why non-donors do not donate blood, which then should guide the development of new recruitment materials (Fishbein & Cappella, 2006; Kok, Schaalma, Ruiter, Van Empelen, & Brug, 2004).

In earlier studies, we focused on revealing the determinants underlying blood donation intentions in different population groups in the Netherlands (i.e. young, well-educated adults; older, well-educated adults; and young, less well-educated adults; Lemmens, Abraham, Hoekstra, Ruiter, De Kort, Brug, & Schaalma, 2005; Lemmens, Abraham, Ruiter, Veldhuizen, Dehing-Oberije, Bos, & Schaalma, 2009). These studies, based on an extended version of the Theory of Planned Behaviour (Ajzen, 1998; Conner & Armitage, 1998), showed that similar determinants underlie blood donation intentions in all study samples: 1) affective attitude, expectations that donating blood is painful and frightening; 2) subjective norm, feeling that important others approve of blood donation; 3) descriptive norm, knowing other blood donors; 4) self-efficacy, feeling able to donate blood; and 5) moral norm, feeling a personal responsibility to contribute to the blood supply (Lemmens et al., 2005; Lemmens et al., 2009). Several international studies showed comparable results (Armitage & Conner, 2001b; Giles & Cairns, 1995; Giles, McClenahan, Cairns, & Mallet, 2004; Godin, Sheeran, Conner, Germain, Blondeau, Gagné, Beaulieu, & Naccache, 2005; McMahon & Byrne, 2008).

For Sanquin blood bank, the distribution of recruitment leaflets is an important channel to reach potential donors and motivate them to start donating blood. These leaflets are commonly designed by advertising agencies and they are not theory and evidence-based, as they are based on common sense expectations instead of scientific research. A content analysis of two current recruitment leaflets showed that these leaflets were mainly aimed at knowledge transfer, and hardly targeted the identified correlates of blood donation intentions. A subsequent experiment on the effectiveness of both leaflets in recruiting new donors revealed that the leaflets were indeed effective in raising knowledge about blood donation, but did not succeed in increasing blood donation intention and its social cognitive determinants (Lemmens, Ruiter, Abraham, Veldhuizen, Vos, & Schaalma, submitted).

Recruitment effectiveness may be improved by targeting the relevant determinants, i.e. affective attitude, subjective norm, descriptive norm, self-efficacy, and moral norm (Armitage & Conner, 2001b; Giles & Cairns, 1995; Giles et al., 2004; Lemmens et al., 2005; Lemmens et al., 2009). We used the Intervention Mapping protocol (Bartholomew, Parcel, Kok, & Gottlieb, 2006) as guideline to develop a new donor recruitment leaflet. Intervention Mapping is used to develop theory- and evidence based health promotion campaigns and consists of six steps: (1) Needs assessment, (2) Matrices of change objectives, (3) Theory-based methods and practical strategies, (4) Designing the program, (5) Adoption and implementation plan, and (6) Evaluation plan (for a description and illustration of each step, see Kok, Schaalma, Ruiter, Van Empelen, & Brug, 2004).

Intervention Mapping guided the development of a new theory-based leaflet. Based on our studies on the correlates of donation intentions (Lemmens et al., 2005; Lemmens et al., 2009), we specified change objectives. Subsequently we selected methods to

change the determinants of donation intentions and we translated these methods into practical strategies. Table 5.1 shows the theoretical methods and practical strategies selected to target these determinants. This article describes an experiment evaluating the effectiveness of the theory-based leaflet compared to the standard leaflet and a no-leaflet control group. The most recent recruitment leaflet, which is used for donor recruitment at the moment, was used as the standard leaflet. Information targeting the blood donation determinants was included to obtain the theory-based version of the leaflet.

Methods

Participants and design

Participants were 244 undergraduate students at Maastricht University. Students are an important target group for Sanquin Blood Bank, not only because they generally are in good health and have a long donor career ahead of them, but also because blood banks are often located in close proximity of universities in the Netherlands. The majority of participants were female ($N = 212$, 87%), which is common for the faculties they were recruited from (psychology, health sciences, and medicine). The mean age was 20.0 years, ranging from 17 to 39. Participants were randomly assigned to one of three conditions. Participants in the first condition received the 'standard leaflet', participants in the second condition received the 'adapted leaflet', and participants in the control condition received no leaflet at all. Participants received either study credits or a gift voucher for participation.

Procedure

Participants were invited to the laboratory and were placed in separate cubicles. They were asked to fill out some socio-demographic questions before reading one of the leaflets. When they finished reading the leaflet they continued with the remainder of the questionnaire. Participants in the control condition did not read a leaflet and only filled out the questionnaire. Completion took about 10-15 minutes.

Both the standard version and the adapted version of the recruitment leaflet were identical in colour, style, and print quality by using coloured copies of the leaflets.

Table 5.1. Matrix of determinants, methods, and strategies

Determinant	Method	Strategy
Affective attitude	Modelling	A 22-year-old female role model explained that the nurse was very warm and friendly, that donating blood was not as frightening and painful as she had expected, and that she was proud to have donated. A 27-year-old male model told that although he didn't look forward to the needle insertion, it was not as bad as his expectations because the nurse distracted him at the very moment. He also stated that the needle was covered with a tissue during donation.
	Arguments	The introduction of the leaflet stressed that new donors receive special attention and care by blood bank staff
Self-efficacy	Modelling	The female model explained that she told the nurse she was nervous about the blood donation and that the nurse comforted her. The male role model said that the nurse asked him about his reasons to start donating blood, which distracted him from the venipuncture.
	Arguments	The introduction of the leaflet explained the donation procedure in detail, including a first medical exam for donor eligibility, the call to donate, and the visit to the donor café after donation On the back of the leaflet, tips were given to donate blood. These tips varied from looking for distraction during donation to eating a light meal and drinking plenty of fluids before donation
Moral norm	Arguments	The introduction of the leaflet stated: 'Blood that you can give'
	Modelling	The male role model stated that he felt a moral norm to contribute: 'I'm healthy, and than you should just give blood'.

Materials and material development

Recruitment leaflet: Standard version

The standard version of the leaflet ('For you just a minute, for me a lifetime') included information addressing the determinants attitude towards blood donation, self-efficacy to register as a new blood donor, and moral norm. The affective attitude information, however, did not have an effect on readers' affective attitude towards blood donation, in other words, the leaflet was not able to reduce expectations of fear and pain. Possibly because the affective attitude information in this leaflet focused on decreasing the perception that donating blood brings risk for the donor, which is a less relevant part of affective attitude. Regarding self-efficacy, only self-efficacy to register as a new blood donors was included, self-efficacy to donate blood in general, or to manage tension and nerves, or manage possible negative consequences were not included, raising only self-efficacy to register, which is an easy behaviour. Moral norm to donate was only targeted in the leaflet's subtitle: 'Donating blood. You cannot do less'. The results of the experimental study showed that this was not enough to activate the moral norm to donate (Lemmens et al., submitted).

The front page of the recruitment leaflet showed the portrait of a young woman, the Sanquin logo, a main slogan ('For you just a minute, for me a lifetime') and a subtitle ('Donating blood. You cannot do less'). The body of the leaflet described patients needing blood, the prerequisites to donate, the registration and donation procedures, how the blood is processed, and that it is safe to donate blood without risk for infection. The body text also included information facilitating registration, such as a phone number and website address. The back of the leaflet provided a list of blood bank locations and contact information for registration. On the bottom of this page the logo was printed again. A registration form was provided as well.

Recruitment leaflet: Adapted version

In the adapted version of the 'For you just a minute, for me a lifetime' leaflet, we aimed to target affective attitude, self-efficacy, and moral norm more specifically, trying to reduce expectations of fear and pain (affective attitude), to enhance self-efficacy to donate blood in general and specifically to manage tension and nerves and to manage possible negative consequences, and to activate a moral norm to donate. We did not include subjective and

descriptive norm information, as these determinants are best targeted in one-on-one contact, for instance, donors talking about their blood donation experiences.

The leaflet's cover and lay-out remained unchanged, just like the slogans (e.g. 'For you just a minute, for me a lifetime' on the cover and 'Every minute someone in our country needs blood' on the first page). Table 5.1 shows the theory-based methods and practical strategies used to target the blood donation determinants. To increase affective attitude, we included a role model story (modelling; Bandura, 1998) of a first-time blood donor: a 22-year-old girl explained that the nurse was very friendly and comforting, that donating was not as frightening and painful as she had expected, and that she was proud to have donated.

To enhance general self-efficacy, we included information explaining the blood donation procedure (e.g. invitation for a physical exam, details of this exam, a call to donate blood, and the donation procedure; it was also mentioned that new donors receive special attention). The female role model (modelling; Bandura, 1998) explained how she coped with being nervous; a second role model (a 27-year-old male) explained how he managed with the venipuncture. On the back of the leaflet, we printed several suggestions to make blood donation easier (arguments; Petty & Cacioppo, 1986; Witte, 1995). These suggestions targeted self-efficacy to manage nerves and tension and self-efficacy to manage possible physical consequences and varied from looking for distraction during venipuncture to eating a light meal and drinking plenty of fluids before donation.

To increase moral norm to contribute to the blood supply we used arguments (Petty & Cacioppo, 1986; Witte, 1995) and modelling (Bandura, 1998); we changed the last sentence of the introduction from 'they all depend on blood voluntarily donated by others' into 'they all depend on blood. Blood that you can give'. We also included the following statements: 'Many donors are needed to meet the demand for blood' and 'You can contribute by becoming a blood donor'. The male role model stressed he felt a moral norm to contribute: 'I am healthy, and then you should just give blood'. The moral norm statement in the subtitle: 'Donating blood. You cannot do less' remained unchanged.

Some of the knowledge presented in the leaflet (like the prerequisites and where to donate) needed to be included in the adapted version as well. Therefore, we added a section with frequently asked questions. Like in the standard leaflet, the adapted version also included the registration form.

Measures

All items, except for socio-demographic questions and blood donation status, used 7-point Likert scales (ranging from *totally agree* to *totally disagree*). These items were recoded in such a way that higher scores represented more positive views about blood donation. Scores on sets of items that showed sufficient internal reliability (Cronbach's alpha $\alpha > .65$) were averaged to create a single measure. Socio-demographic questions (like gender and age) were asked using appropriate answer possibilities.

Blood donation status. To measure whether participants had ever considered blood donation, participants were asked to mark which statement described them best. Statements ranged from 'I have never considered blood donation' to 'I used to be a blood donor, but I have resigned'. Together with the socio-demographic variables, this question was answered before reading a leaflet.

Attitude. We distinguished cognitive and affective attitude (Lemmens, Abraham, Ruiter, Veldhuizen, Bos, & Schaalma, 2008; Lemmens et al., 2009). Four bipolar items measured cognitive attitude ($\alpha = .72$; e.g. 'To donate blood in the next six months is... rewarding – not rewarding'). Affective attitude was also measured with four bipolar items ($\alpha = .81$; e.g. 'To donate blood in the next six months is... pleasant – unpleasant').

Subjective norm. Four items measured subjective norm regarding blood donation ($\alpha = .94$; e.g. 'My family thinks I should donate blood in the next six months').

Descriptive norm. One open-ended question measured descriptive norm, i.e. 'How many blood donors do you know?'

Self-efficacy. We measured three dimensions of self-efficacy, as we targeted all these dimensions in the improved leaflet (Lemmens et al., submitted). One dimension focused on general self-efficacy to give blood and was measured with 2 items ($\alpha = .70$, $r = .54$; e.g. 'If I want to, I would be able to give blood in the next six months'), two dimensions focused on donation-specific self-efficacy. Self-efficacy to manage tension and nerves was measured with 3 items ($\alpha = .87$; e.g. 'If I want to donate blood in the next six months, I would be able to manage my nerves and tension'), and self-efficacy to manage possible physical consequences of blood donation was measured with 3 items as well ($\alpha = .77$; 'If I want to donate blood in the next six months, I would be able to prevent or cope with negative physical consequences').

Moral norm. Four items measured moral norm to donate blood ($\alpha = .80$; e.g. 'I feel a personal responsibility to donate blood in the next six months').

Intention. Three items measured intention to donate blood ($\alpha = .97$; e.g. 'Do you intend to donate blood in the next six months?').

Application form. On the last page of the questionnaire, we gave participants the opportunity to register as a blood donor. Participants could fill out the application form and return it in a sealed envelope. These sealed envelopes were sent to the blood bank's donor administration. We scored whether participants handed in this special envelope (yes or no). We also scored whether participants asked to take a leaflet home (yes or no).

Data analysis

SPSS 12.01 was used to analyze the data. Multivariate analyses of variance (MANOVA) were employed to analyze the differences between conditions for all measures. Univariate analyses of variance (ANOVA) were conducted to reveal the nature of these differences.

Results

A MANOVA on gender, age, and blood donation status showed that the groups were comparable on these variables (Wilks' $\lambda = .99$; $F(6) = .45$; $p = .85$). A MANOVA on the correlates of blood donation intentions (i.e. affective attitude, subjective norm, descriptive norm, self-efficacy, moral norm, and intention) revealed between-group differences (Wilks' $\lambda = .893$; $F(16) = 1.68$; $p < .05$).

Subsequent ANOVAs showed that the groups differed on affective attitude and self-efficacy to give blood (Table 5.2). Participants who had read the adapted version of the leaflet had a more positive affective attitude than participants who had read the standard version of the leaflet. They seemed to be more positive than the control group participants as well, although this difference was only marginally significant. Furthermore, participants who had read a leaflet had more self-efficacy to give blood than participants who had not read a leaflet. There were no differences in self-efficacy between both leaflet conditions.

We also monitored whether participants had taken a leaflet home and whether they registered as blood donor. There were no significant differences between the groups

on these measures. In total, 57 participants (23%) took a leaflet home and 24 (10%) used the application form to immediately register as blood donor. A post hoc t-test revealed that participants who had registered as blood donor were more likely to have seriously considered blood donation before participating in the study ($M = 2.63$; $SD = .82$) than those who had not registered ($M = 2.16$; $SD = .82$, $t(237) = 2.61$, $p < .01$).

Table 5.2. Means and (standard deviations) for the determinants targeted in the adapted leaflet per condition

	Control Group	Standard leaflet	Adapted leaflet
Affective attitude	3.88 (1.53) ^c	3.80 (1.42) ^b	4.39 (1.39) ^{b,c}
Subjective norm	2.72 (1.48)	2.77 (1.28)	2.74 (1.35)
Descriptive norm	1.85 (2.19)	2.16 (3.66)	2.34 (3.81)
Self-efficacy: give blood	4.67 (1.77) ^{a,b}	5.41 (1.48) ^a	5.26 (1.42) ^b
Self-efficacy: tension and nerves	4.87 (1.83)	4.93 (1.59)	5.02 (1.60)
Self-efficacy: possible physical consequences	4.56 (1.36)	4.67 (1.34)	4.81 (1.48)
Moral norm	3.33 (1.48)	3.39 (1.35)	3.67 (1.42)
Intention	3.51 (1.70)	3.68 (1.80)	3.94 (1.72)

^a = $p < .01$

^b = $p < .05$

^c = $p < .07$

Discussion

Theory-based interventions are more effective than interventions that are based on common-sense expectations (Fishbein & Cappella, 2006; Fishbein & Yzer, 2003; Kok et al., 2004). The results of our study support this statement to some extent: participants who had read the adapted version of the recruitment leaflet had a more positive affective attitude towards blood donation than participants who had read the standard version of the leaflet, and they marginally differed from control group participants. Participants who had read the adapted version of the leaflet also had more self-efficacy to donate blood in general than control group participants, participants reading the standard leaflet also

scored better on self-efficacy to donate than control group participants. The adapted leaflet did not succeed in enhancing self-efficacy to manage nerves and tension, self-efficacy to manage possible negative consequences, and moral norm to donate. The intention to become a blood donor was not changed either.

Since self-efficacy to manage nerves and tension and self-efficacy to manage possible negative consequences were targeted on the back of the leaflet, participants may not have read this part. As participants read the leaflet in a private cubicle, we could not control if this was indeed the case. Using direct observation methods (e.g., an eye-tracking device) in a future study would provide information about how well the leaflet is read. It would also answer the question whether the self-efficacy information was not read or that the information was not successful in increasing self-efficacy. If the self-efficacy information was read, but did not have an effect, it is worthwhile to study whether a leaflet is not the best strategy to target self-efficacy or if we poorly targeted donation-specific self-efficacy in the adapted version of the leaflet (Whittingham, Ruiter, Brunsting, & Kok, in press).

Future research should reveal how moral norms can be activated. More knowledge about activating norms should guide better implementation of moral norm information in future campaigns and reveal whether leaflets are a suitable medium for increasing moral norms.

It has to be noted that we only looked at the short-term effects. Participants answered the questionnaire immediately after reading the leaflet, and we did not follow up to see if participants' opinions and intentions changed over time after reading the leaflet (a delayed effect). Moreover, the leaflets did not target all the variables of the extended TPB. Subjective and descriptive norm were found to influence blood donation intentions, but were not targeted in the leaflet as subjective and descriptive norm information stems from family, friends, and acquaintances. It would be interesting to study whether the leaflet is more effective when subjective and descriptive norms are enhanced as well. As it is hard to include personal subjective and descriptive norm information in the leaflet, these determinants could be targeted by having the leaflets distributed by blood donors, for instance in a 'donors recruiting new donors' campaign. Donors could be asked to engage in donor recruitment and inform their family and friends about blood donation (Lemmens et al., 2008).

Earlier studies also were not conclusive about the use of leaflets and brochures for recruiting new blood donors and whether leaflets are suitable to influence blood donation determinants and intentions. McGuire (1985) already illustrated the challenge of obtaining behaviour change by using leaflets. Ferrari and Leippe (1992) showed that, although they were successful in increasing favourable attitudes and moral obligation to donate, this did not result in more donations. Leaflets recruiting employees to donate at an on work site blood drive also were not effective in increasing the number of donations made (Gimble, Kline, Makris, Muenz, & Friedman, 1994). France, Montalva, France, and Trost (2008) developed a new detailed donor recruitment brochure. This brochure, however, was successful in increasing self-efficacy to donate, attitude towards donation, and intention to donate compared to scores before reading the brochure. In the same study, the standard Red Cross material also increased self-efficacy and intention to donate, while reading a health brochure had no effect.

Even though the leaflets in this study did not change intention, 24 participants did register as blood donor. For them it was enough to facilitate registration by providing an application form. It is possible that the leaflet has the same effect in the general public: not recruiting new donors, but providing those who want to become a blood donor with the means to take action.

Using a systematic approach to develop a theory and evidence-based leaflet was partly effective. The theory-based version of the leaflet did increase affective attitude towards blood donation, but not self-efficacy and moral norm. More research is needed to determine if leaflets are the right medium to recruit new blood donors, as the theory-based leaflet was not able to increase donation-specific self-efficacy and moral norm to donate. Since subjective and descriptive norms towards blood donation cannot be targeted using leaflets, it seems worthwhile to invest in recruitment strategies other than spreading recruitment leaflets as well. One possibility is engaging donors in donor recruitment, as donors enhance subjective and descriptive norms by being donors.

Chapter 6

**Identifying blood donors willing to
help with recruitment**

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Abstract

Social influence shapes behaviour and donors are ambassadors for blood banks. Donors are role models for family and friends and so may be able to help with donor recruitment. A questionnaire was used to assess donors' willingness to engage in donor recruitment. Measures included willingness to recruit new donors and antecedents of recruitment motivation based on the Theory of Planned Behaviour (TPB). More than half of our participants were willing to try to recruit friends and family (57%). Self-efficacy was the most important correlate of intention to recruit as were cognitive attitude and experience with the blood bank. The findings suggest that the TPB provides a good basis for understanding cognitive antecedents of donors' willingness to recruit other donors. Results suggest that using existing donors to recruit new donors could be an efficient and cost effective way to recruit additional donors. This approach warrants further investigation.

Keywords: recruitment, Theory of Planned Behaviour, blood donors, intention

Introduction

As in other countries, the blood supply in the Netherlands is dependent upon donors who donate their blood voluntarily without remuneration. Dutch donors are registered with Sanquin, the national blood bank, and wait for an invitation prior to making a donation. Each year about 10% of donors withdraw. Donors withdraw for failing to meet the eligibility criteria, they resign, or they fail to act upon their invitation to donate five times in a row (Sanquin Blood Bank, 2007). To ensure a safe and sufficient blood supply, it is important to recruit new donors to replace these withdrawals.

Previously we have studied the determinants of intentions to start donating blood among non-donors (Lemmens, Abraham, Hoekstra, Ruiter, De Kort, Brug, & Schaalma, 2005; Lemmens, Abraham, Ruiter, Veldhuizen, Dehing-Oberije, Bos, & Schaalma, 2009) based on the Theory of Planned Behaviour (Ajzen, 1991). Across different populations we found that expectations of fear, pain, and nervousness (affective attitude), feeling able to donate blood (self-efficacy), and feeling a personal moral obligation to donate (moral norm) are predictive of intentions to donate. These intentions subsequently predict blood donation behaviour (Armitage & Conner, 2001b; Giles & Cairns, 1995). In addition, we found that it is important to have friends and/or family who support blood donation or donate themselves (subjective norm and descriptive norm, respectively). This latter finding highlights the potential of donors to help with recruitment. Our previous results are similar to those of other studies (Armitage & Conner, 2001b; Giles & Cairns, 1995; Giles, McClenahan, Cairns, & Mallet, 2004; Godin, Sheeran, Conner, Germain, Blondeau, Gagné, Beaulieu, & Naccache, 2005).

A study of donor satisfaction among Dutch blood donors revealed that 54% had started donating because of another donor, mostly a family member or friend (Los, 2006) while studies in Norway and Denmark have shown that 55%-60% of donors made their first donation because of interpersonal contact, mostly through family, friends, colleagues, and acquaintances (Mikkelsen, 2004; Misje, Bosnes, Gasdal, & Heier, 2005). A study among North-American donors showed that donors under 25 years of age and first time donors listed 'a blood drive organizer or recruiter encouraged me' and 'a family member,

a friend, or colleague encouraged me' as important reasons to donate (Glynn, Kleinman, Schreiber, Zuck, Mc Combs, Bethel, Garratty, & Williams, 2002). Another study showed that 14% of those called and asked to donate at the blood drive agreed to this. Many of those had brought along one or more friends, resulting in an overall response of 30% (Piliavin & Callero, 1991). Finally, a third study among North-American donors showed that when undergraduate students who had just given blood were asked to approach five persons they knew and five they did not know and ask them to donate blood as well, 31% of friends actually donated, compared to 14% of strangers (Jason, Rose, Ferrari, & Barone, 1984).

These studies suggest that blood donors can be very successful in influencing others to consider donation and to give blood. By contrast, despite continuing efforts to induce a general positive social norm towards blood donation in the Netherlands using mass media campaigns and the distribution of information leaflets and flyers, we found that Dutch non-donors did not know many blood donors (Lemmens et al., 2009) and did not acknowledge a pro-donation social norm (Lemmens et al., 2005; Lemmens et al., 2009). This suggests that it may be difficult to establish a blood-giving norm through mass media communication. Personal communication by blood donors might be a more effective way of establishing pro-donation social influence, but are current donors willing to engage in donor recruitment?

The Present study

The present study aims to establish whether donors are willing to help in donor recruitment by sharing their experiences with family and friends and asking them to become a blood donor. In addition, we wanted to know what factors influence this willingness because understanding these determinants could guide the development of interventions designed to motivate donors to engage in donor recruitment.

We employed a questionnaire based on an extended version of the Theory of Planned Behaviour (TPB; Ajzen, 1991; Ajzen, 2002), because this theory has been shown to predict blood donation itself and a wide range of other behaviours (Armitage & Conner, 2001a; Armitage & Conner, 2001b; Conner & Sparks, 1996; Giles & Cairns, 1995; Giles et

al., 2004; Lemmens et al., 2005; Lemmens et al., 2009). The TPB proposes that intention is the most proximal determinant of action and that intention, in turn, is determined by attitude, subjective norm, and perceived behavioural control (PBC). Attitude represents a person's evaluation of the behaviour (e.g., will it lead to valued outcomes?). It has been suggested that attitudes can be usefully divided into cognitive and affective components (Conner & Sparks, 1996; Trafimow & Sheeran, 1998; Trafimow, Sheeran, Lombardo, Finlay, Brown, & Armitage, 2004), and this has been supported in the context of blood donation (Breckler & Wiggins, 1989; Farley & Stasson, 2003; Giles & Cairns, 1995; Godin et al., 2005). In this study, measures of cognitive attitude referred to the importance of motivating others to start donating blood, while affective attitude measures focused on the feelings concerned with trying to motivate others. Subjective norm reflects perceived social approval of others and we operationalized subjective norm in terms of anticipated reactions to recruitment efforts. PBC refers to a person's perception of whether or not they can control performance. PBC is closely related to Bandura's concept of self-efficacy and because self-efficacy has been found to be more amenable to modification (e.g. Ajzen, 1991, 1998; Bandura, 1998; Giles et al., 2004), we included a measure of self-efficacy in relation to motivating others to donate.

Several studies showed that the predictive utility of the TPB is enhanced by adding moral norm, that is, a feeling of moral obligation to act (Manstead & Parker, 1995; Parker, Manstead, & Stradling, 1995). Consequently, we added two measures of moral norm: moral norm to recruit new donors and moral norm to donate blood. We also added measures of past behaviour (Conner & Armitage, 1998 ; Conner & Sparks, 1996; Ferguson & Bibby, 2002) and recruitment responsibility. The latter was included to reveal whether donors would regard recruitment of new blood donors as the sole responsibility of the blood bank, or whether they feel a responsibility to contribute to recruitment. Furthermore, we measured how donors evaluated previous experiences with the blood bank because negative experiences might discourage recruitment of others. Finally, in anticipation of future 'donors recruiting new donors' campaigns, we assessed whether donors would appreciate receiving rewards for recruitment and value receiving support materials.

Methods

Participants and procedure

A random sample of 400 donors was selected from those registered at the national blood bank and questionnaires were sent to their home address. Questionnaires were returned by 224 donors (56%). To increase sample size, we distributed 207 questionnaires at blood centres of which 191 were completed and returned (92%). In total 607 donors were invited to participate, of whom 415 completed a questionnaire (68%).

More than 95% of respondents had donated within the last six months and all within the last year. The majority of this sample was male ($N = 267$; 64%), had at least an intermediate vocational education ($N = 298$, 72%), and was employed ($N = 301$; 73%).

Each questionnaire included a cover letter explaining the importance of donor recruitment, why donors could be helpful in donor recruitment, and what this would imply (e.g., share donation experiences with family and friends, answer questions, and ask whether they considered donating blood). It was stressed that we wanted to learn about donors' own views, whether or not they were interested in donor recruitment. Anonymity was assured because questionnaires were not identified and did not request personal details. The letter that accompanied the questionnaire provided contact details of the researchers and informed donors that completion of the questionnaire would take approximately 10 minutes. Questionnaires could be returned using postage free addressed return envelopes.

Apart from questions concerning gender, age, education, and employment, all measures were based on 7-point Likert-like scales with only the endpoints labelled as respectively *totally agree* and *totally disagree*. Scores were recoded so that higher scores represent more positive views towards recruiting new donors. Scores on sets of items showing sufficient internal reliability (i.e., Cronbach's alpha $\alpha > .65$) were averaged to create a single measure.

Measures

Extended TPB measures

Intention. Four items measured the intention to motivate family and friends to start donating blood. Respondents were asked to imagine that Sanquin had asked them to recruit new blood donors among their family and friends and asked for their response (e.g., 'I intend to motivate someone among my family and/or friends to become a blood donor when I am asked to do so' and 'I would try to motivate someone among my family and/or friends to become a blood donor when I am asked to do so'; $\alpha = .91$).

Cognitive attitude. Two bipolar items measured cognitive attitude towards donor recruitment (i.e., 'To motivate my family and/or friends to become a blood donor is....' 'good – bad'; 'important – unimportant'; $\alpha = .78$, $r = .74$).

Affective attitude. Four bipolar items measured affective attitude towards donor recruitment (i.e., 'To motivate my family and/or friends to become a blood donor is....' 'annoying – enjoyable'; 'reasonable – unreasonable'; 'pleasant – unpleasant'; 'obtrusive – unobtrusive'; $\alpha = .73$).

Anticipated reactions. Four items measured reactions anticipated from others (e.g., 'My family and/or friends will be interested when I try to motivate them to start donating blood' and 'My family and/or friends will react negatively when I try to motivate them to start donating blood'; $\alpha = .82$).

Self-efficacy. Four items measured self-efficacy in recruiting blood donors among family and friends (e.g., 'If I would like to, I could motivate my family and/or friends to start donating blood'; $\alpha = .90$).

Moral norm to recruit. One item measured moral norm to recruit new donors (i.e., 'It is my obligation to society to motivate my family and/or friends to become a blood donor').

Moral norm to donate blood. Three items measured moral norm towards blood donation in general (e.g., 'It is a social obligation to give blood'; $\alpha = .89$).

Additional measures

Recruitment responsibility. Four items measured the degree to which donors felt donor recruitment is solely the responsibility of the blood bank (e.g., 'It is not my job to motivate my family and/or friends to become a blood donor' and 'I would feel troubled, when I would motivate my family and/or friends to start donating blood'; $\alpha = .67$).

Experience with blood bank. Two items measured the donor's experiences at the blood centres (i.e., 'In general, I have pleasant experiences with the blood bank' and 'I have pleasant experiences with blood bank staff'; $\alpha = .70$, $r = .56$).

Past behaviour. Three items with endpoints 'no, never' and 'yes, often', measured past behaviour (i.e., 'Do you discuss blood donation with your family and/or friends?', 'Have you ever tried to motivate someone to become a blood donor', and 'Have you ever successfully recruited a new blood donor?'; $\alpha = .69$).

Reward. One item measured whether donors would like to receive a reward for recruiting new donors (i.e., 'I would like to receive a reward for every new donor').

Materials. One item measured whether donors would like to receive supportive materials (i.e., 'I would like to receive some information with tips how to recruit new donors myself').

Data analysis

We first conducted moderation analyses to test whether the background variables age, gender, employment status, and the context in which participants completed the questionnaire (home vs. blood centre) influenced the relationships between potential cognitive antecedents and intention to try to recruit others. For each predictor we first regressed intention onto the predictor (e.g., cognitive attitude); second, we entered the moderator (e.g., age) into the model; and third we entered the interaction of these two (predictor * moderator). The moderation is significant when the interaction term is significant after controlling for direct effects of the predictor and moderator (see Figure 1) (Baron & Kenny, 1986).

We then explored the influence of the extended TPB variables (including past behaviour, recruitment responsibility, and experience with blood bank) on the motivation to recruit new donors by regressing intention onto significant correlates, using hierarchical multiple regression. We conducted also post hoc regression analyses to explore significant interaction terms.

Results

Willingness to help with recruitment

Responses to the measure of intention to motivate family and friends to donate, show that more than half of the participants (56.9%) scored more than 4 (the mid point), 9.2% scored 4, and 33.9% scored below 4. Thus the majority of our sample intended to act as a recruitment agent.

Moderators

The correlation matrix (Table 6.1) shows that measurement context (home vs. blood centre), age, and level of education are significantly correlated with intention. We conducted moderation analyses to test whether these variables moderated the relation between predictor variables (extended-TPB measures) and intention. The results showed

Table 6.1. Intercorrelations of background variables and intention to recruit new blood donors

	1	2	3	4	5	6	7	8
1) Intention	-							
2) Measurement context	.14**	-						
3) Gender	-.02	.11*	-					
4) Age	-.13**	-.28***	-.28***	-				
5) Education	.11*	-.08	-.06	-.17***	-			
6) Job	-.06	-.08	-.00	.50***	-.08	-		
Mean	4.29	1.46 ^a	.35 ^b	49.7	5.50 ^c	1.27 ^d	0.92 ^e	1.73 ^f
Standard deviation	1.60	0.50	0.48	11.48	1.64	0.44	0.90	0.45

* $p < .05$ ** $p < .01$ *** $p < .001$

^a $N = 224$ donors at home and $N = 191$ at the blood bank

^b $N = 267$ males and $N = 145$ females

^c $N = 114$ lower educated and $N = 298$ high educated

^d $N = 301$ employed and $N = 111$ unemployed (including students, housewives, and retirement)

^e $N = 183$ no volunteer work, $N = 150$ sometimes volunteer work, and $N = 73$ regular volunteer work

^f $N = 106$ members of the donor association and $N = 289$ non-members

significant interaction effects for context by moral norm to donate, age by anticipated reactions, age by recruitment responsibility, age by past behaviour, and education by past behaviour (beta's ranging between $-.127$ and $.470$ for main effects, and between $-.154$ and $.139$ for interaction effects).

Correlates of intention

Means, standard deviations, and correlations between study measures are shown in Table 6.2. Hierarchical multiple regression was employed to explore significant correlates of the intention to recruit new donors (Table 6.3). To control for differences due to measurement context, we entered this variable in the first step of the regression. The analysis showed that context alone accounted for 2% of variance in intentions. Secondly, age and education were entered in the regression model. Only education accounted for a significant proportion of variance in intention (2%). In the third step, self-efficacy was entered into the model and accounted for 24% of variance, reducing the effect of context to non-significance. Entering anticipated reactions on step 4 accounted for another 7% of variance. In the fifth step we entered affective and cognitive attitude measures. Only cognitive attitude contributed significantly to the variance accounting for 3% and reducing the effect of education to non-significance. Moral norm to recruit and moral norm to donate, both included in the sixth step, did not significantly contribute. Together, the TPB variables accounted for 39% of variance in intentions to recruit new donors.

Responsibility to recruit, entered on step 7, accounted for another 1% of variance and reduced the effect of anticipated reactions to non-significance. The inclusion of experience with the blood bank and past behaviour showed that experience accounted for an additional 3%. Finally, we entered the interaction terms into the model on the next step (using stepwise entry). The interactions between context by moral norm to donate and age by recruitment responsibility reached significance and explained an additional 1% of variance each.

The final model accounted for 45% of variance in intentions to recruit new donors. Self-efficacy was the most important predictor of intention to recruit new donors among family and friends ($B = 0.35$, $p < .001$), followed by cognitive attitude ($B = 0.19$, $p < .001$), and experience with the blood bank ($B = 0.17$, $p < .001$).

Table 6.2. Intercorrelations of determinants of donor recruitment intentions

	1	2	3	4	5	6	7	8	9	10
1) Intention	-									
2) Cognitive attitude	.36***	-								
3) Affective attitude	.45***	.45***	-							
4) Anticipated reactions	.46***	.47***	.57***	-						
5) Self-efficacy	.53***	.22***	.36***	.47***	-					
6) Moral norm to recruit	.34***	.24***	.29***	.36***	.35***	-				
7) Moral norm donate blood	.16***	.32***	.15**	.18***	.10*	.40***	-			
8) Recruitment responsibility	.37***	.27***	.44***	.41***	.17***	.18***	.12*	-		
9) Experience with blood bank	.25***	.22***	.13*	.19***	.04	.00	.07	.15**	-	
10) Past behaviour	.23***	.26***	.29***	.28***	.26***	.28***	.22***	.20***	.06	-
Mean	4.29	6.06	4.84	4.92	4.26	3.67	4.73	5.33	6.51	4.41
Standard deviation	1.60	1.03	1.16	1.15	1.38	1.78	1.70	1.50	0.76	1.44

* $p < .05$ ** $p < .01$ *** $p < .001$

Furthermore, to explore the context by moral norm to donate interaction, we repeated the regression analysis for donors who answered the questionnaire at home and for those who answered it at the blood bank. These analyses revealed that moral norm to donate had a negative effect on intention to recruit for donors at home ($B = -.14$, $p < .05$ in the final model) but a positive effect on intention for donors at the blood bank ($B = .20$, $p < .01$ in the final model).

To explore the interaction age by recruitment responsibility, we conducted simple slope analysis (Aiken & West, 1991). Recruitment responsibility had a positive effect on intention to recruit new donors when age is low (one SD [$SD = 11.5$] less than the mean; $B = .23$, $p < .01$), but not when age is high (one SD greater than the mean; $B = .01$, $p = .83$).

Table 6.3. Hierarchical regression of recruitment intention onto potential determinants

Step / Variable entered	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta
1. Measurement context	14**	.12**	.05	-.02	-.02	-.02	-.02	-.04	-.03	-.03
2. Age		-.08	-.08	-.04	-.03	-.03	-.04	-.04	-.05	-.04
Education		.10*	.10*	.10*	.08	.08	.05	.07	.07	.08
3. Self-efficacy			.50***	.37***	.35***	.33***	.35***	.36***	.35***	.35***
4. Anticipated reactions				.30***	.16*	.14*	.10	.07	.06	.06
5. Affective attitude					.07	.07	.02	.04	.05	.04
Cognitive attitude					.23***	.23***	.22***	.18***	.19***	.19***
6. Moral norm to recruit						.07	.05	.07	.07	.05
Moral norm to donate						.01	.01	-.00	.00	.02
7. Recruitment responsibility							.16**	.12*	.12*	.13*
8. Experience with blood bank								.18***	.17***	.17***
Past behaviour								.03	.02	.02
9. Context * Moral norm to donate									.12**	.12**
10. Age * Recruitment responsibility										-.10*
R ²	.02	.04	.28	.35	.38	.39	.40	.43	.44	.45
R ² change	-	.02	.24	.07	.03	.01	.01	.03	.01	.01
F change	-	4.28	136.67***	44.05***	19.69***	3.32	6.72*	10.57**	7.18*	7.27*

* $p < .05$, ** $p < .01$, *** $p < .001$

What would donors find helpful?

We used a median-split (Median = 4.5) to compare high and low intenders; high intenders valued the offer of supportive materials more ($M = 5.00$, $SE = 1.73$) than low intenders ($M = 3.90$, $SE = 1.91$, $t(408) = -5.83$, $p < .001$). However, donors did not want rewards for their recruitment efforts. High and low intenders did not differ on this measure (high $M = 2.00$, $SE = 1.65$ versus low $M = 1.49$, $SE = 1.42$, $t(406) = -1.47$, $p > .05$).

Discussion

Previous research has indicated that blood donors themselves could be helpful in recruitment. Donors can influence those close to them to value donation and to become motivated to donate. We explored donors' willingness to recruit and cognitive antecedents of such willingness. Our results are encouraging. Nearly 60% of participating donors indicated that they would be willing to help with recruitment by informing family and friends, and by encouraging them to donate. Of course, not all will translate their good intentions into action, but if a substantial proportion of these intenders could be persuaded this could have a dramatic effect on recruitment. Moreover, although high as opposed to low intenders did appreciate some instruction on how to recruit, they did not wish to be rewarded for each donor they recruited. Consequently, schemes to involve donors in active recruitment could be both effective and cost effective.

The Theory of Planned Behaviour provided a useful theoretical framework for understanding donors' intentions to recruit new donors. Together, the TPB variables accounted for 38% of variance in intentions which is typical of applications of the theory (Ajzen, 1991; Armitage & Conner, 2001a; Godin & Kok, 1996). Self-efficacy and cognitive attitude were the most important correlates of intentions to recruit. Thus a simple model consisting of only self-efficacy and cognitive attitude could provide initial targets for campaigns designed to encourage donors to recruit others. Consequently, such schemes should focus on convincing donors that they are able to motivate others to start donating blood (self-efficacy) and that it is important to do so (cognitive attitude). Thus our findings provide a blueprint for designing brief courses on recruitment for willing donors.

Interaction effects revealed that moral norm to donate had a negative effect on recruitment motivation for donors who answered the questionnaire at home, but had a positive effect for those at the blood bank. Donors who have just given blood often report feeling good and special (Piliavin, 1990) and this may have strengthened the moral norm intention relationship. However, further research would be required to fully understand this finding. Nonetheless, the implications are clear, moral norm should only be highlighted if donors are approached as potential recruiting agents in the blood bank.

Recruitment responsibility only had an effect on the intentions of younger donors and not for older ones suggesting that normative arguments should only be used for

younger donors. Interestingly, this finding mirrors results reported by Albarracin, Gilette, Earl, Glasman, and Durantini (2005), who found that normative arguments added to the effectiveness of condom use promotion interventions for people younger than 21, while for older groups inclusion of normative arguments reduced intervention effectiveness.

We used a single-item measure for moral norm to recruit, which could have limited the reliability of this measure. However, correlations between our moral norm item and intention and the other measures were within a normal range. Furthermore, these correlations are comparable to those found in other studies employing multiple-item measures of moral norm (Armitage & Conner, 2001b; Godin, Bah, Sow, Minani, Morin, & Alary, 2008; Lemmens et al., 2005; Lemmens et al., 2009; Myklestad & Rise, 2007).

Further research on the sources of donor motivation to actively recruit friends and family would be informative. For example, donors indicated they did not want to receive a reward for recruiting new donors, suggesting that the motivation to engage in recruitment is intrinsic rather than extrinsic motivation (Deci & Ryan, 1985). This is also reflected in the positive attitudes towards recruitment in our sample. Future work could investigate further how donors expect to feel and do feel after trying to recruit new donors. It would also be informative to design and evaluate a 'donors recruiting new donors' campaign which invited donors to engage in donor recruitment. Such research would answer a key question raised by our study; namely: Can we offer the donors willing to actively recruit new donors the help and encouragement they need to act on these good intentions? Outcomes should include attempts to recruit, experience of such attempts, and success rates.

In conclusion, our findings strongly encourage blood banks to identify donors willing to become involved in recruitment and to support them in successfully recruiting their friends and family. If half of the donors willing to recruit manages to recruit one new donor among family, friends, and perhaps colleagues, blood banks could save substantial amounts on mass media donor recruitment.

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Chapter 7

Donors recruiting new donors:

Testing a systematic intervention to engage blood donors
in donor recruitment

To be submitted as: Lemmens, K.P.H., Ruiter, R.A.C., Abraham, C., & Schaalma, H.P.
Donors recruiting new donors: Testing a systematic intervention to engage blood donors
in donor recruitment.

Abstract

The authors tested the effects of a 'donors recruiting new donors' campaign in a randomized, controlled trial among a sample of blood donors who participated in all study phases ($N = 734$). Donors who returned the baseline questionnaire and visited the blood bank during the study period ($N = 998$) were randomly assigned to one of two intervention conditions or a control condition. At blood bank visit, donors in the intervention conditions received either a theory-based leaflet to enhance recruitment motivation and 5 postcards to facilitate recruitment, or the postcards alone. Donors in the control condition received no materials. One week and six weeks after donors' visit to the blood bank, a self-report questionnaire measured the intention to engage in donor recruitment (at one-week follow-up) and actual recruitment behaviour (at one-week and six-week follow-up). At one-week follow-up, donors in the intervention conditions reported a higher intention to engage in donor recruitment, and more recruitment activities than donors in the control condition. At six-week follow-up, donors who received both the leaflet and the postcards were more successful in recruiting new donors than those who received only the postcards or no materials. Mediation analysis showed that the intervention effect at six-week follow-up was mediated by the intention to engage in recruitment at one-week follow-up. Engaging donors in donor recruitment is an effective approach, especially if campaign materials successfully target recruitment motivation and facilitate effective action.

Keywords: intention, behaviour, Theory of Planned Behaviour, donor recruitment, blood donation, cue to action

Introduction

Behavioural change interventions are more effective when they are theory and evidence-based (Bartholomew, Parcel, Kok, & Gottlieb, 2006; Fishbein & Yzer, 2003). Systematic development of behavioural change interventions starts with a needs assessment that results in formulating specific behavioural goals and change objectives for the intervention (Bartholomew et al., 2006). Subsequently, appropriate theory-based methods, aimed at changing the determinants of the target behaviours, need to be selected and translated into practical strategies. These strategies are then combined into an intervention program that is systematically implemented and evaluated (Bartholomew et al., 2006; Kok, Schaalma, De Vries, Parcel, & Paulussen, 1996; Kok, Schaalma, Ruiter, Van Empelen, & Brug, 2004). In this study, we designed and evaluated an evidence-based intervention aimed at motivating blood donors to engage in donor recruitment. We used the Intervention Mapping protocol (Bartholomew et al., 2006; Kok et al., 2004) to guide the systematic development of this intervention and a randomized, controlled trial to test its effects on recruitment motivation and behaviour.

In the Netherlands, approximately 600.000 whole blood donations are annually needed. These donations are made by less than 400.000 donors (Sanquin, 2007). Because 10% of donors withdraw each year, there is a continuing need for new donors and thus effective recruitment strategies. Blood banks often rely on mass media campaigns and the distribution of leaflets in public places to recruit new donors. Unfortunately, these strategies mainly aim at knowledge transfer and do not systematically target identified psychosocial correlates of blood donation motivation (Lemmens, Abraham, Ruiter, Veldhuizen, Vos, & Schaalma, submitted). Consequently, these strategies are not very effective in recruiting new donors (Los, 2006).

By drawing on the Theory of Planned Behaviour (Ajzen, 1991) and its extended versions (for a review, see Armitage & Conner, 2001a), we conducted three survey studies to determine which factors influence the intention to become a blood donor (Lemmens, Abraham, Hoekstra, Ruiter, De Kort, Brug, & Schaalma, 2005; Lemmens, Abraham, Ruiter, Veldhuizen, Dehing-Oberije, Bos, & Schaalma, in 2009). Our studies showed that the intention to donate blood is largely influenced by five factors: affective attitude, subjective

norm, descriptive norm, self-efficacy, and moral norm. This means that potential donors are more likely to become a blood donor when they expect that donating is not frightening and painful (affective attitude); when they think that important others approve of donation (subjective norm); when they know some blood donors (descriptive norm); when they feel able to donate blood (self-efficacy); and when they feel a responsibility to contribute to the blood supply (moral norm). These studies were conducted in the Netherlands and are in line with international studies on the psychosocial correlates of blood donation motivation (Armitage & Conner, 2001b; Giles & Cairns, 1995; Giles, McClenahan, Cairns, & Mallet, 2004; Godin, Sheeran, Conner, Germain, Blondeau, Gagné, Beaulieu, & Naccache, 2005; McMahon & Byrne, 2008).

The influence of subjective and descriptive norms highlights the potential of donors to assist in donor recruitment. By talking about blood donation and sharing their experiences with their family, friends, and colleagues, donors show that they approve of blood donation, and, simultaneously, they serve as role models. In other words, donors can function as the ambassadors of the blood bank.

In preparing the present study, we surveyed the psychosocial determinants of donors' motivation to engage in donor recruitment (Lemmens, Abraham, Ruiter, Veldhuizen, Bos, & Schaalma, 2008). This study revealed that more than half of the 415 participating blood donors (57%) were willing to participate in a recruitment program. By tentatively generalizing this finding to the total blood donor population, the enormous potential of a 'donors recruiting new donors' campaign is clearly illustrated. The results further showed that donors' intention to participate in recruitment activities was mainly related to 1) their confidence regarding their ability to introduce blood donation in a conversation, to answer questions, and to ask others to consider blood donation (self-efficacy), 2) the perceived importance and expected pay-off of talking about blood donation (cognitive attitude), 3) their experiences with the blood bank and blood bank staff, and 4) their feelings of responsibility regarding engaging in recruitment. These variables accounted for 43% of variance in recruitment motivation.

Many social-cognitive models of behaviour (e.g. the Theory of Planned Behaviour, Health Belief Model, Protection Motivation Theory) assume that intention is the key

determinant of behaviour, and that intentions capture the relevant motivational factors (Abraham, Sheeran, & Johnston, 1998; Austin & Vancouver, 1996; Conner & Norman, 1996; Eagly & Chaiken, 1993; Gollwitzer & Moskowitz, 1996; Maddux, 1999). A meta-analysis by Webb and Sheeran (2006) confirmed that intentions indeed do influence behaviour; medium to large changes in intention engendered small to medium changes in behaviour.

One of the factors that have been identified as a trigger for moving from intentions to action is 'cue to action': internal or external triggers of behaviour (Rosenstock, 2005; Strecher & Kreuter, 2000). Studies of health protective behaviour have identified experiencing symptoms (internal) or diseases among friends/relatives (external) as cues to action triggering the onset of health behaviour change (e.g. change of diet, more exercise, or losing weight; Meillier, Lund, & Kok, 1997). The effects of a cue to action on behaviour depend on the person's intention to engage in the behaviour. For people with a low intention, an intense cue to action is needed to trigger behaviour; for those with a high intention to act, a small cue may already be sufficient (Rosenstock, 2005). The effects of cue to action have been discussed frequently, but there is hardly empirical evidence available for the effects of these cues (Conrad, Campbell, Edington, Faust, & Vilnius, 1996). In our study we asked blood donors to engage in donor recruitment. To help willing donors translating their good intentions into action, we targeted the identified determinants of recruitment motivation and added a cue to action in our intervention.

The present study

The identified determinants of recruitment motivation among donors (Lemmens et al., 2008) served as the target points for the intervention program that was evaluated in the present study. The main outcome variables were recruitment motivation and behaviour by measuring participants' intention to engage in recruitment activities and the extent to which they asked and motivated people to consider blood donation.

In designing the intervention we chose to develop written materials, because handing out written information can be easily fitted into the donation procedure without increasing

workload for blood bank staff. The supportive material consisted of an educational leaflet and a series of 5 postcards. The leaflet targeted the social cognitive determinants of recruitment motivation (Lemmens et al., 2008); the postcards could be handed over to potential donors and served as a cue to action for both donors (to start a conversation about blood donation) and for invited potential donors (to register as blood donor).

The effects of the intervention on recruitment motivation and behaviour were tested in a randomized controlled experiment. Participants were donors who were scheduled to visit the blood bank within the study period. They received with their invitation to make a donation a baseline questionnaire at their home address, approximately two weeks before visiting the blood centre. The baseline questionnaire included a cover letter introducing the start of a new donor recruitment campaign and the campaigns' objective (donors recruiting new donors), and invited donors to complete the baseline questionnaire and two other questionnaires that were also sent to their home addresses one week and six weeks after the visit to the blood bank, respectively. All donors who visited one of the participating blood centres during the study period were assigned to one of three experimental conditions. Donors in the two intervention conditions received the intervention materials, either the leaflet and the postcards or the postcards alone, and a letter inviting them to actively participate in this campaign. A third group of donors served as the control condition and received no information when visiting the blood centre.

Two hypotheses were tested. First, we expected that explicitly asking donors to recruit new donors and providing them with a set of donor registration postcards (postcards only intervention) would be more effective than a baseline letter combined with standard practice in which donors are not explicitly asked to recruit others (control condition). Postcards were expected to function as cue to action triggering recruitment. Second, we expected that providing donors with an evidence-based leaflet in addition to inviting them to recruit potential donors and providing them with postcards (leaflets plus postcards intervention) would be more effective than both the postcards only and control interventions. Leaflets were expected to boost intentions to donate. Differences among conditions were assessed at one and six-week follow-ups.

Method

Study setting

In the Dutch blood donation system, donors receive an invitation to donate blood from Sanquin Blood Bank. A fortnight after receiving this invitation, donors are free to visit the blood bank at a time that suits them best within a two week period. Approximately, 60% of those invited visit the blood bank within the specified period (Personal Communication, Sanquin, 2008). The present study was conducted in three blood centres in the province of Limburg in the south of the Netherlands between 26 April and 8 June 2007.

Study participants were donors who received a baseline questionnaire together with an invitation to make a donation at one of the participating blood centres during the study period. A cover letter attached to the baseline questionnaire explained the need for new donors and that a new 'donors recruiting new donors' campaign would soon be launched by the national blood bank. It explained the target behaviour (discussing blood donation with family, friends, and colleagues; sharing personal experiences; explaining the need for new donors; and asking others to consider blood donation) and stated that the donor's opinion about this sort of recruitment is much valued. The participants were further informed that they would receive a maximum of three questionnaires and that completion of each questionnaire would take 5-10 minutes. The letter stated that the study was conducted in collaboration with Maastricht University, and that 10 gift vouchers of €15 each would be raffled among those participants completing all three questionnaires. The letter ended with the contact details of one of the researchers.

Experimental design

All donors visiting the blood centre during the study period were randomly allocated to one of two intervention conditions or a no information, control condition. Donors assigned to one of the two intervention conditions received the 'donors recruiting new donors' intervention material at the registration desk; donors in the control condition did not receive any intervention material (standard practice). To rule out effects of blood centre, contamination of experimental conditions, and timing, experimental conditions were

counterbalanced in such a way that in a six-week period all conditions took place at all participating blood centres in a different order with each condition running in a period of two consecutive weeks. One week and six weeks after visiting the blood bank, donors who returned the first questionnaire received the second and third questionnaire at their home address together with a postage free envelope that could be used for returning the questionnaire.

Participants and study procedure

Figure 7.1 presents a schematic representation of the study design and number of participants in each stage and experimental aim of the study. The first questionnaire was sent to 5067 donors and 2593 completed questionnaires were returned (response rate 51.2%). During the study period, 2459 of the 5067 originally invited donors visited the participating centres to make a donation (48.5%¹). Of these donors, 998 (40.6%) had completed the baseline questionnaire and were eligible for inclusion in the study. They received one week and six weeks after their visit to the blood centre the follow-up questionnaires at their home address. The one-week follow-up questionnaire was completed and returned by 845 donors (84.7%) and 734 (73.5%) also completed the six-week follow-up questionnaires. The mean age of this final sample ($N = 734$) was 47.4 years (ranging between 18 and 69 years), 62% was male, and 77% had at least intermediate vocational qualifications. The distribution of blood types (O: 47%, A: 40%, B: 7%, AB: 2%; rhesus positive: 85%, rhesus negative: 15%) was comparable to the national donor file (Sanquin Blood Bank Database, 2007).

Based on the available information from the blood centre about the time and place of each participant's visit to the blood centre, 254 of those donors that completed all three measurements should have been assigned by the blood bank staff to the leaflet plus postcards condition, 228 donors to the postcards only condition, and 252 to the control condition. Blood bank staff, however, failed to provide every visiting donor with the intervention material during the intervention periods. As a result, among those who completed all three measurements, 209 donors reported at the one-week follow-up that they had not received any material. They were subsequently re-assigned to the control condition ($N = 461$). The remaining participants were assigned to either the leaflet plus

postcards condition ($N = 127$) or to the postcards only condition ($N = 146$) after assuring a full agreement between the time and place of their blood bank visit and their self-report answer about the kind of intervention materials they had received.

Figure 7.1. A schematic representation of the study

(1) leaflet plus postcards condition
(2) postcards condition
(3) control condition

¹ Note that blood bank staff failed to distribute the 'donors recruiting new donors' material to a substantial number of donors assigned to the intervention conditions. Donors who did not receive the material were transferred to the control group

¹ To obtain a baseline measure for all donors who visited one of the participating blood centers during the study period, we also sent this questionnaire to donors whose two-week-donation-period started before the onset of our study or continued afterwards. Donors who made a donation before or after our study period, were not included in this analysis, thus underestimating the real turn up.

Intervention material

During the intervention periods, as opposed to the control periods, visitors of the participating blood centres received a closed envelope that contained the intervention materials. A letter was included explaining that a new donor recruitment campaign was started and that donors were invited to participate in this campaign by talking about blood donation, sharing their experiences, and informing their family, friends, and colleagues about the need for new donors and asking them to consider blood donation. To prevent contamination of experimental conditions and differences due to enthusiasm and presentation style, blood bank staff members were instructed to refer participants to the letter and the listed contact persons when questions were raised about the contents of the envelope.

The intervention consisted of both a theory- and evidence based leaflet and a series of 5 postcards (see Figure 7.2). The leaflet aimed to motivate donors to engage in recruitment activities and – based on a prior empirical study (Lemmens et al., 2008) – targeted cognitive attitude, self-efficacy, and perceived responsibility towards donor recruitment. The postcards were expected to function as a cue to action for both donors and potential donors. Recruiters could use them to introduce blood donation to the conversation and potential donors could use them to easily register as a blood donor.

Leaflet

To target the determinants underlying the intention to engage in donor recruitment, we first specified a series of sub-steps (i.e., performance objectives) necessary to obtain the target behaviour (i.e., recruiting new donors). For example, donors have to think of potential donors to ask and to plan when and how to start a conversation. Table 7.1 shows a matrix with the performance objectives (left column), psychosocial determinants (top row), and the program objectives (cells). The program objectives reflect the goals for each determinant necessary to obtain the behavioural change formulated in the performance objectives (Bartholomew et al., 2006). For example, a donor has to feel capable (i.e., self-efficacy) to recruit new donors (performance objective), know the eligibility criteria (i.e., knowledge) to decide whom to ask (performance objective), and be able to start a conversation about blood donation (performance objective).

Figure 7.2
The 'donors recruiting new donors' leaflet plus postcards

Table 7.1. Matrix of change objectives

	Knowledge	Self-efficacy	Cognitive attitude	Recruitment responsibility	Experience with blood bank
Donors decides to engage in donor recruitment	<ul style="list-style-type: none"> - Donor knows 10% withdrawal rate - Donor realizes importance of new donors 	<ul style="list-style-type: none"> - Donor feels able to engage in donor recruitment 	<ul style="list-style-type: none"> - Donor acknowledges that family, friends and/or colleagues can donate as well 	<ul style="list-style-type: none"> - Donor realizes he is the ambassador of the blood bank 	<ul style="list-style-type: none"> - Donor has pleasant experiences with the blood bank
Donor thinks of potential new donors	<ul style="list-style-type: none"> - Donor knows the basic eligibility criteria for donation 		<ul style="list-style-type: none"> - Donor realizes that not everyone can become a blood donor - Donor can judge whom to ask 	<ul style="list-style-type: none"> - Donor realizes that non-donors have often not considered the possibility to give blood 	
Donor plans a recruitment conversation	<ul style="list-style-type: none"> - Donor knows several strategies to introduce blood donation 	<ul style="list-style-type: none"> - Donor plans when, where, and how to talk about blood donation - Donor recognizes opportunities to talk about blood donation 			
Donor talks about own experiences		<ul style="list-style-type: none"> - Donor is able to talk about his own experiences 		<ul style="list-style-type: none"> - Donor feels responsible to give the blood bank more publicity 	<ul style="list-style-type: none"> - Donor has positive experiences with the blood bank and feels valued and appreciated
Donor informs whether family, friends, and/or colleagues are interested to donate as well		<ul style="list-style-type: none"> - Donor feels confident to inform whether others have considered blood donation 			
Donor answers questions	<ul style="list-style-type: none"> - Donor knows the answer to the questions most likely to be asked 	<ul style="list-style-type: none"> - Donor is confident that he can answer questions 			
Donor helps potential donors with registering	<ul style="list-style-type: none"> - Donor knows the different methods to register as blood donor 	<ul style="list-style-type: none"> - Donor feels capable to help others register 			

Table 7.2 presents the methods used to target these determinants and how they are translated into practical strategies (cf. Abraham & Michie, 2008; Bartholomew et al., 2006). Below we describe how we translated these strategies into leaflet content. To target cognitive attitude, we used persuasion (Petty & Cacioppo, 1986; Witte, 1995) and modelling (Bandura, 1986). This resulted in an introduction explaining the need for new blood donors and that donors can be of assistance in recruiting new donors. We also explained the target behaviour (i.e., talking about blood donation, sharing your personal experiences, explaining that there is a need for new donors, and asking others if they have considered donating blood). Three role models talked about their recruitment experiences in the leaflet, one of them reported to have enjoyed talking about blood donation; another explained that it was important to him that Sanquin Blood Bank has sufficient blood donors. The first model acknowledged that some of her friends were not interested, but others were and some of them registered as blood donor (mastery vs. coping model; Bandura, 1997).

To change self-efficacy to recruit new donors, we used modelling (Bandura, 1997), guided practice (Bandura, 1997), and verbal persuasion (Petty & Cacioppo, 1986; Witte, 1995) this resulted in suggestions to introduce blood donation to the conversation (e.g. a recent blood donation or showing the 'donors recruiting new donors' postcards) and role model stories. Donors were also stimulated to consider who they could ask, and when, where, and how they would do this, to resemble some kind of guided practice (Bandura, 1986, 1997). One of the role models showed a mastery experience (Bandura, 1997) by first struggling with starting a conversation about blood donation, and later explaining how she eventually managed to ask others. Another model used his last donation to tell his colleagues about the need for new donors, and the third explained how she used a discussion about volunteering to recruit her friends. Verbal persuasion (Petty & Cacioppo, 1986; Witte, 1995) to increase self-efficacy in answering questions resulted in a list of frequently asked questions, published on the back of the leaflet. Sanquin's phone number, the website, and the postcards were mentioned to facilitate registration.

To change recruitment responsibility we used new arguments (Petty & Cacioppo, 1986; Witte, 1995). The introduction of the leaflet explained that non-donors have often

Table 7.2. Matrix of determinants, methods, and strategies

Determinants	Methods	Strategies	References
Knowledge	Verbal persuasion	-Information that each year new donors need to be recruited to replace donors that withdraw -Information about the basic eligibility criteria and donation procedure (FAQ) -Information how new donors can register	(Petty & Cacioppo, 1986; Witte, 1995)
Self-efficacy	Modelling	-Role model story of donors who recruited new donors among family, friends, and colleagues (different opportunities to discuss blood donation, ease of talking about blood donation, sharing own experiences, and answering questions)	(Bandura, 1986, 1997)
	Verbal persuasion	-List of frequently asked questions to answer non-donors' questions	(Petty & Cacioppo, 1986; Witte, 1995)
	Guided practice	-Instruction how to introduce blood donation -Instruction to consider whom to ask and, when and how to do this	(Bandura, 1986, 1997)
	Cue to action	-Postcards to remind donor and to introduce blood donation	
Cognitive attitude	Arguments	-Explaining that non-donors often do not donate because they have never considered the possibility to donate blood	(Petty & Cacioppo, 1986; Witte, 1995)
	Modelling	-Role model stories explaining their experiences with recruiting new donors; that they have enjoyed talking about blood donation, that some friends were not interested, but that others registered, that it is important to have enough donors	(Bandura, 1986)
Recruitment responsibility	Arguments	-More publicity can encourage non-donors to consider blood donation. Donors can provide reliable publicity by talking about blood donation and the need for new donors -Donors are the ambassadors of the Blood Bank and Sanquin values its donors	(Petty & Cacioppo, 1986; Witte, 1995)
Experience with blood bank	Facilitation	-Changes in the environment. This was beyond the scope of this study, but Sanquin needs to make sure that donors feel welcome and appreciated at all times	

not considered blood donation, that more publicity can encourage them to consider donation, that donors can increase this publicity by talking about blood donation and encouraging others to start donating as well, and that talking about blood donation can be very successful. Most donors do not realize that non-donors often lack information about donation. In the end it is stated that Sanquin Blood Bank is happy with donors like the role models, that these donors are the ambassadors of Sanquin, and that they know like no other what it feels like to donate blood.

Postcards

In addition to the leaflet we developed a set of 5 postcards that were attached to each other. On the front, each card featured the name and logo of the national blood bank ('Sanquin bloedbank'), a general slogan ('blood is life') in small print, and one of five different slogans: 'We are looking for people like you'; 'blood brothers'; 'We give together'; 'Are you in?'; and 'Working together, giving together!'. The back of the postcards was addressed to Sanquin Blood Bank and could be used to register as blood donor by filling out the personal details section. A 'Yes, I register as blood donor' and a 'Thank you for your registration!' were included above and below the personal information questions.

Measures

All three questionnaires included measures for gender, date of birth, postal code, and blood type using appropriate answering scales. These data were used to match the questionnaires. The baseline questionnaire also asked for more personal information, like education and employment status, using appropriate answer scales. All remaining measures were based on Likert scales with 7 response options, ranging from *totally agree* to *totally disagree*. Measures were recoded so that higher scores represent more positive views towards recruiting new donors. Scores on sets of items that showed sufficient internal reliability (Cronbach's alpha $\alpha > .65$) were averaged to create a single measure.

Demographic variables

At baseline, respondents were asked to mark the highest level of education they had obtained on a scale ranging from primary education to academic training with seven response options. They were also asked for their employment status (answer possibilities: 'Yes, full-time job'; 'Yes, part-time job'; and 'no, not employed'), whether they engaged in volunteer work (yes/no), and whether they were a member of the donors' association (yes/no).

Receipt of intervention materials and leaflet evaluation

The one-week follow-up questionnaire included items that asked participants whether they had received the leaflet (yes/no) and the postcards (yes/no). In addition, participants who had received the leaflet were asked to indicate on Likert scales how well they had read the

leaflet (1 = *superficial*, 7 = *very good*) and how they evaluated the leaflet (6 items, $\alpha = .71$; e.g. 'The leaflet was appealing', 1 = *fully disagree*, 7 = *fully agree*).

Intention

Three items measured intention to recruit new donors among family, friends and/or colleagues at baseline ($\alpha = .95$) and one-week follow-up ($\alpha = .95$): 'I intend to recruit a new blood donor from my family, friends, and/or colleagues in the next month'; 'I will try to recruit a new blood donor from my family, friends, and/or colleagues in the next month'; and 'There is good chance that I will attempt to recruit a new blood donor from my family, friends, and/or colleagues in the next month'.

Behaviour

Recruitment behaviour was measured with four items at baseline, one-week and six-week follow-ups with time perspectives *ever*, *past week* and *past six weeks*, respectively. Two items used 7-point Likert scales (1 = *never*, 7 = *very often*) and were combined to measure *recruitment effort* by asking whether participants had tried to convince other persons to start donating blood (i.e. 'How often have you [ever/past week/past six weeks] talked about blood donation with your family, friends and/or colleagues?' and 'How often have you [ever/past week/past six weeks] tried to motivate someone to start donating blood?'; baseline $r = .55$, one-week $r = .71$, six-week $r = .80$).

The remaining two items asked participants to indicate the number of persons they asked [ever, in the past week, and in the past six weeks] to become a blood donor (*number people asked*), and the number of persons they thought actually registered as blood donor (*number people registered*).

Statistical analysis

Data were analyzed using SPSS for windows, version 12.0.1. Participants who had returned all three questionnaires ($N = 734$) but had extreme values on more than 10% of the variables were excluded from further analyses ($N = 10$), leaving $N = 724$ participants for the analyses (leaflet plus postcards condition $N = 121$, postcards condition $N = 145$, control condition $N = 458$). Chi-Square analyses and multivariate analyses of variance (MANOVA) were conducted on baseline measures (demographic measures, intention,

and behaviour) to verify randomization. Analyses of variance, controlling for the baseline score on the dependent measure under test (ANCOVA's; cf. Van Breukelen, 2006), were conducted for intention and behaviour measures to compare the effectiveness of the three experimental conditions at one-week and six-week follow-up. In case of a significant effect of experimental condition, simple contrast analyses were used to test the hypothesized differences among the experimental groups. The reported estimates of the effect sizes are the partial eta squared (η_p^2) for the ANCOVA's and Cohen's d for the simple contrast analyses. In addition, mediation analyses (Baron & Kenny, 1986) were conducted to test for the role of intention at one-week follow-up in predicting the effects of the intervention materials on the behavioural measures at six-week follow-up.

Results

Donors who had received both the leaflet and the postcards also answered questions evaluating the leaflet; a score of 4 was neutral. Donors were positive about the leaflet; they thought it was appealing, credible, and encouraged them to think about it ($M = 4.77$, $SD = 1.18$; $M = 5.31$, $SD = 1.10$; and $M = 4.29$, $SD = 1.49$, respectively), and was not annoying ($M = 6.19$, $SD = 1.21$). Although they said the leaflet did not contain a lot of new information ($M = 2.83$, $SD = 1.44$), they recommended using it in future recruitment actions ($M = 5.08$, $SD = 1.42$).

Randomization check

Chi-Square tests for gender, employment, volunteer work, blood type, and donors' association membership showed that the three experimental conditions did not differ on characteristics related to gender, employment, volunteer work, membership of the donors' association, and blood type ($ps > .12$). A Wilks' Lambda, λ , MANOVA on the baseline measures of age and education revealed no differences between experimental conditions, $F(4, 1454) = 1.52$, $p = .19$. An ANOVA on baseline intention confirmed that the experimental conditions were equivalent on this measure, $F(2, 715) < 1.00$. Finally, a Wilks' λ MANOVA confirmed that the three experimental conditions did not differ on the baseline measures of behaviour prior to visiting the blood bank, $F(3, 689) < 1.00$.

Table 7.3. Differences between donors who received both the leaflets and postcards, the postcards alone, or no information on baseline measures and one and six-week follow-up measures

		Leaflet plus postcards (SD)	Postcards (SD)	Control (SD)
Baseline	Intention ¹	4.67 (.15)	4.64 (.13)	4.62 (.07)
	Behaviour: Ever talked and tried to recruit ¹	4.59 (1.51)	4.52 (1.53)	4.41 (1.53)
	Behaviour: How many asked ever ²	2.46 (1.73)	2.39 (1.78)	2.29 (1.75)
	Behaviour: How many applied ever ²	0.81 (1.14)	0.69 (1.14)	0.73 (1.10)
One-week follow-up	Intention ¹	4.46 (1.48) ^b	4.36 (1.64) ^a	3.98 (1.60) ^{a,b}
	Behaviour: Talked and tried to recruit, last week ¹	3.75 (1.83) ^b	3.58 (1.87) ^c	3.06 (1.68) ^{b,c}
	Behaviour: How many asked, last week ²	1.78 (2.64) ^b	1.34 (1.95) ^a	0.83 (1.62) ^{a,b}
	Behaviour: How many applied, last week ²	0.24 (.05) ^a	0.28 (.05) ^b	0.09 (.03) ^{a,b}
Six-week follow-up	Behaviour: Talked and tried to recruit, last 6 weeks ¹	3.50 (1.61) ^a	3.34 (1.79)	2.99 (1.99) ^a
	Behaviour: How many asked, last 6 weeks ²	1.83 (2.92) ^b	1.74 (2.25) ^a	1.16 (1.99) ^{a,b}
	Behaviour: How many applied, last 6 weeks ²	0.36 (.94) ^{a,b}	0.17 (0.43) ^a	0.14 (.48) ^b

¹ measured on a 7-point scale

² measured with an open-ended question

Note. Mean scores in a row that share superscripts differ significantly at ^a $p < .05$ and ^{b,c} $p < .01$.

Table 7.3 presents the mean scores (SDs) for the three experimental groups and the results from the pairwise comparisons at baseline, one-week follow-up, and six-week follow-up.

One-week follow-up: Intention and behaviour

Intention

A significant effect of experimental condition was found on the intention to recruit new donors, $F(2, 708) = 7.51, p < .001, \eta_p^2 = .02$. Compared with donors in the control condition, both donors in the postcards only condition and donors in the leaflet plus postcards condition reported a more positive intention to recruit new donors, $t(593) = 2.92, p < .01, d = 0.24$, and $t(566) = 3.14, p < .01, d = 0.31$, respectively. No significant support was found for the hypothesis that the leaflet plus postcards condition would result into a more positive intention than the postcards only condition, $t(259) < 1.00, d = 0.06$.

Behaviour

Recruitment effort. A significant effect of experimental condition was found on reported recruitment effort, $F(2, 710) = 9.27, p < .001, \eta_p^2 = .03$. Simple contrast analyses confirmed that donors in the postcards only condition and those in the leaflet plus postcards condition both reported to have talked more about blood donation and more often tried to recruit new donors than those in the control condition, $t(596) = 3.01, p < .01, d = 0.30$, and $t(567) = 3.67, p < .001, d = 0.40$, respectively. No significant difference was found between participants in the leaflet plus postcards condition and those in the postcards only condition, $t(259) < 1.00, d = 0.09$.

Number of people asked. The experimental groups differed on the reported number of people that have been asked to consider becoming a blood donor, $F(2, 694) = 12.63, p < .001, \eta_p^2 = .04$. Donors in the postcards only condition reported a higher number of people being asked than those in the control condition, $t(580) = 2.64, p < .01, d = 0.30$. This was also true for participants in the leaflet plus postcards condition, $t(558) = 4.76, p < .001, d = 0.51$. In addition, the difference between those in the leaflet plus postcards condition and those in the postcards only condition approached significance, $t(252) = 1.90, p = .06, d = 0.19$, with participants in the former condition reporting a higher number of people being asked.

Number of people registered. A significant effect was found of experimental condition, $F(2, 618) = 8.59, p < .001, \eta_p^2 = .03$, showing that both the postcards only condition and the leaflet plus postcards condition reported a higher number of people that registered than the control condition, $t(520) = 3.65, p < .001, d = 0.34$, and $t(500) = 2.70, p < .01, d = 0.42$, respectively. No significant difference was found between the postcards only and leaflet plus postcards conditions, $t(218) < 1.00, d = 0.06$.

Six-week follow-up: Behaviour

Recruitment effort. A significant effect of experimental condition was found on reported recruitment effort, $F(2, 714) = 4.90, p < .01, \eta_p^2 = .01$. Simple contrast analyses showed that both donors in the postcards only condition and those in the leaflet plus postcards condition reported to have talked more about blood donation and made more attempts to recruit others than those in the control condition, $t(596) = 2.10, p < .05, d = 0.21$, and $t(572) = 2.74, p < .01, d = 0.31$, respectively. There was no significant difference between the leaflet plus postcards and the postcards only conditions, $t(262) < 1.00, d = 0.09$.

Number of people asked. A significant effect of experimental condition was found, $F(2, 706) = 6.96, p < .001, \eta_p^2 = .02$, showing that donors in both the postcards only and leaflet plus postcards conditions asked more people to become a blood donor than those in the control condition, $t(590) = 2.84, p < .01, d = 0.28$, and $t(567) = 2.99, p < .01, d = 0.33$. There was no significant difference between the leaflet plus postcards and the postcards only conditions, $t(262) < 1.00, d = 0.04$.

Number of people registered. A significant effect of experimental condition, $F(2, 630) = 5.77, p < .01, \eta_p^2 = .02$, showing that those in the leaflet plus postcards condition reported a higher number of people that registered to become a blood donor after being asked compared to both the postcards only condition, $t(225) = 2.53, p < .05, d = 0.27$, and the control condition, $t(505) = 3.38, p < .001, d = 0.37$. The latter two conditions did not significantly differ in reported number of people that registered, $t(532) < 1.00, d = 0.06$.²

² When donors who indicated not to have received the intervention materials are coded as missing instead of transferring them to the control group ($N = 121$ leaflet plus postcards; $N = 145$ postcards; and $N = 248$ control condition), the results are comparable to the results mentioned above.

Mediation analyses

To test whether the effects of the intervention on behaviour at six-week follow-up were mediated by intention at one-week follow-up, we conducted mediation analyses. In accordance with the procedure suggested by Baron and Kenny (1986), we contend that intention at one-week follow-up functions as a mediator of the effects of the intervention materials on behaviour at six-week follow-up if the following conditions are fulfilled: (1) exposure vs. no exposure to the intervention materials accounts for variance in behaviour at six-week follow-up (see Table 7.3 for significance levels); (2) exposure vs. no exposure to the intervention materials accounts for variance in intention at one-week follow-up while controlling for intention at baseline (see Table 7.3); (3) variations in intention at one-week follow-up account for variations in behaviour while controlling for exposure to the intervention materials; and (4) the previously significant effect of exposure on behaviour is reduced after controlling for the effect of intention at one-week follow-up and the baseline measures of intention and behaviour. Conditions 2 and 3 together imply condition 4 (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002).

Adhering to conditions 1 and 2 of Baron and Kenny (1986) we tailored our mediation analyses to the pattern of the significant effects of the experimental conditions on intention at one-week follow-up and behaviour at six-week follow-up (see Table 7.3). We therefore restricted the mediation analyses to: (a) the effect of the leaflet plus postcards condition vs. the control condition and (b) the postcards only condition vs. the control condition on reported recruitment effort; (c) the effect of the leaflet plus postcards condition vs. the control condition and (d) the postcards only vs. the control condition on the reported number of people asked to become a blood donor; and (e) the effect of the leaflet plus postcards condition vs. the control condition on the reported number of people that reported to become a blood donor. We further used the Sobel's Z-test to determine whether the reduction in the strength of the original effect of exposure to the materials on behaviour, following the inclusion of the mediator, significantly differed from zero, thus indicating mediation (Kenny, Kashy, & Bolger, 1998).

Table 7.4 provides a summary of the mediation analyses. Please note that analyses concerning the abovementioned conditions 1 and 2 differ to some extent from the simple contrast analyses reported earlier because we controlled here for baseline measures to

have a more strict test of the mediation role of intention. Comparing in Table 7.4 the columns 'X -> Y' and 'M(X) -> Y' indicates that for all mediation analyses conducted the effects of the experimental conditions that were compared (X) on the outcome variables at six-week follow-up (Y) reduced in size when controlling for intention (M) at one-week follow-up. Subsequent tests of whether these reductions were greater than zero (i.e., no change) by means of Sobel's Z test (see final column) showed that these reductions were significant, suggesting partial mediation (and not full mediation because the effects were not reduced to zero).

Table 7.4. Summary of mediation analyses: Testing the mediation role of intention at one-week follow-up (M) on the effect of experimental conditions (X) on the measures of behaviour as six-week follow-up (Y).

	X -> Y		X -> M		M(X) -> Y		X(M) -> Y		Sobel's test	
	F	p	F	p	F	p	F	p	Z	p
<i>Behaviour</i>										
Recruitment effort										
(a) L+P vs. C	7.67	.006	10.05	.002	133.79	.000	3.51	.061	3.05	.002
(b) P vs. C	4.28	.039	8.51	.004	101.70	.000	1.26	.262	2.78	.005
# people asked										
(c) L+P vs. C	10.32	.001	10.05	.002	64.08	.000	6.41	.012	2.03	.003
(d) P vs. C	9.05	.003	8.51	.004	51.31	.000	4.80	.029	2.67	.008
# people registered										
(e) L+P vs. C	10.17	.002	10.05	.002	30.16	.000	7.55	.006	2.78	.005

Note. L+P = leaflet plus postcards intervention, P = postcards only intervention, C = control group; X = experimental conditions compared (L+P vs. C, P vs. C), M = mediator (intention at one-week follow-up), Y = outcome (behaviour at six-week follow-up: recruitment effort, number of people asked, number of people registered); F = F-statistic, p = p-value, Z = Z-statistic.

Intention-to-treat analyses

It is possible that the results are biased by participants dropping out of the study. For instance, donors who are not motivated to engage in donor recruitment might refuse to return the follow-up questionnaires after receiving the intervention materials, leaving only motivated donors in the intervention conditions, while unmotivated donors in the control condition do not drop out and remain in the analyses, biasing the results in such a way that the intervention seems more effective than it is. To control for a bias we

conducted an intention-to-treat analyses including all participants who returned the baseline questionnaire and visited the blood centre during the study period.

All participants who completed the baseline questionnaire were included in the intention-to-treat analyses. Non-responders on the one-week follow-up received a score of 1 (on a scale from 1 to 7) for the *recruitment effort* items (meaning they made no attempts to recruit others), and scores of 0 for *number of people asked* and *number of people registered* (meaning they did not ask and they did not successfully recruit others). We imputed intention scores at one-week follow-up with the intention scores at baseline (last value carried forward). For non-responders at the six-week follow-up questionnaire, we imputed these missing values with the scores on the behaviour items at one-week follow-up (last value carried forward).

One-week follow-up. At one-week follow-up, the intention-to-treat analyses revealed that the effects for *intention to engage in donor recruitment*, $F(2, 972) = 12.33$, $p < .01$, $\eta_p^2 = .03$, and *number of people asked*, $F(2, 957) = 4.99$, $p < .01$, $\eta_p^2 = .01$ remained significant. The effect for *number of people applied* was only marginally significant, $F(2, 861) = 2.79$, $p < .06$, $\eta_p^2 = .01$, while the effect for recruitment effort had completely disappeared, $F(2, 975) = .76$, $p = .47$, $\eta_p^2 = .00$. The patterns of the findings were similar to the former simple contrast analyses

Six-week follow-up. At six-week follow-up the effects for *recruitment effort*, $F(2, 978) = 7.38$, $p < .001$, $\eta_p^2 = .02$, *how many people asked*, $F(2, 970) = 8.42$, $p < .01$, $\eta_p^2 = .02$, and *how many people applied*, $F(2, 859) = 7.13$, $p < .001$, $\eta_p^2 = .02$, all remained significant and showed similar data patterns as the results of the per protocol analyses.

Discussion

In this study we tested whether theory- and evidence-based 'donors recruiting new donors' supportive material would motivate blood donors to discuss blood donation with their family, friends and colleagues, and to motivate them to register as blood donor. We also evaluated the success of recruitment activities. We expected that donors receiving a theory-based leaflet targeting the correlates of blood donation motivation (i.e. attitude, self-efficacy, and recruitment responsibility; Lemmens et al., 2008) and a trigger to register

as a blood donor (registration postcards), would report more recruitment activities than donors receiving only the trigger material. We also expected that donors receiving the postcards would engage more actively in donor recruitment than control group donors.

The results of our study showed no differences in recruitment intention and behaviour between both intervention conditions at one-week follow-up. Donors in both intervention conditions, however, did report a higher intention to engage in donor recruitment in the next month than donors in the control condition. Moreover, the results showed that donors in the intervention conditions reported 1) more effort in recruiting other people by starting discussions on blood donation, 2) a higher number of people asked to consider donation, and 3) more recruitment success. The results at one-week follow-up confirm our hypothesis that both types of intervention materials have positive effects on recruitment motivation and behaviour, but do not support our assumption that the combination of leaflet plus postcards would outperform the provision of only postcards.

At six-week follow-up, donors having received both the leaflet plus the postcards did not significantly differ from those having received only the postcards regarding raising the issue of blood donation and asking others to consider donation, but donors receiving the leaflet and the postcards were most successful in recruiting new donors as they reported more successful registrations. Although participants receiving only the postcards reported more recruitment effort and indicated having asked more people to consider blood donation than those in the control condition, they did not report a higher frequency of raising blood donation nor a higher recruitment success. These results again confirm our hypothesis that both types of intervention materials have positive effects on recruitment behaviour and even showed some evidence that providing donors with the leaflet plus postcards might result in higher recruitment success than only the postcards.

To summarize, participants receiving the leaflet plus the postcards did show more positive recruitment intentions at one-week follow-up, and they reported more discussions, more requests and a higher perceived recruitment success than control group participants at both one-week and six-week follow-up. Mediation analyses in addition showed that these effects were mediated by the intention to engage in donor recruitment at one-week follow-up. These results are in line with the conclusion of Webb and Sheeran (2006) that health education materials that do accomplish changes in behavioural intention, are

likely to initiate behaviour change. The study further underlines the value of using social cognition models to target the determinants underlying intentions. In addition, providing donors with only postcards also increased intentions, which in turn increased the number of people that were approached to consider blood donation. This finding thus suggests that providing people with a cue to action might reinforce intentions and thus makes performance of the behaviour more likely.

Participants who reported not having received the intervention materials were transferred to the control group. Although we cannot rule out that donors who did not want to engage in donor recruitment reported that they had not received the materials, additional analyses showed that the results remained similar when these donors are coded as system-missing. Moreover, blood bank staff afterwards acknowledged they did not hand the intervention materials to each donor.

Intention-to-treat analyses were conducted to control for participants dropping out of the study. These analyses revealed that excluding participants who failed to return one or both follow-up questionnaires did not affect the results.

Our 'donors recruiting new donors' campaign seemed to be a successful approach to recruit new blood donors. At six-week follow-up, all participants together reported having asked 984 others to consider registering as a blood donor. Of donors having received the leaflet plus the postcards, 58% claimed to have asked at least one other person to consider donation, and 18% claimed to be sure of a least one registration. For donors having received postcards only, these percentages were 57% and 15%, respectively; for donors in the control group 40% and 11%.

One of the limitations of this study is that we included self-reported behaviour as an outcome measure instead of observed behaviour. Donors reported how many people they had asked and how many of those indeed registered as blood donor. With respect to privacy and anonymous data analyses, we did not ask donors for the names of the people they had asked. As new donors can register online, by telephone, by filling out the registration form included in the standard recruitment leaflet, and by filling out the 'donors recruiting new donors' postcards; and as these postcards were used in both intervention conditions, it was impossible to develop a system tracking all new donor registrations per condition.

Another limitation is a possible mere measurement effect. All donors were asked to complete three questionnaires. Repeatedly filling out questionnaires can affect behaviour, for example, Godin, Sheeran, Conner, and Germain (2008) showed the mere measurement effect in blood donation. Sending donors a questionnaire about blood donation already affected their donation frequency. The size of the measurement effect could have been estimated by including a second control condition receiving only follow-up questionnaires.

It would also be interesting to evaluate the 'donors recruiting new donors' campaign from the potential donors' perspective. Has this campaign increased their perceptions of social norms to donate (i.e. subjective and descriptive norm)? Were they provided with additional information about blood donation, i.e. information targeting affective attitude, self-efficacy, and moral norm or should future 'donors recruiting new donors' campaigns also distribute information leaflets for potential donors to accompany the postcards? And last but not least, are donors recruited by others more loyal donors than donors recruited by other recruitment activities?

In this study, donors received the 'donors recruiting new donors' material at the registration desk and they were asked to read it. As personal contact is an important motivator to make a donation (Piliavin, 1990), it might also be an important motivator to do something extra, like recruiting new donors. It would be interesting to know if the effectiveness of the 'donors recruiting new donors' campaign would increase when donors were asked personally to engage in recruitment before handing them the material, for instance after the donation when donors are enjoying a cup of coffee.

All in all, our study suggests that our 'donors recruiting new donors' campaign is a very effective strategy to expand the population of blood donors. Even when only a fraction of the donor population, e.g. 10% would manage to recruit a new donor this would balance the yearly donor drop out. Our study suggests that the potential of our strategy goes beyond this expectation. At the moment, the 'donors recruiting new donors' campaign is implemented in the South-eastern part of the Netherlands.

A graphic consisting of seven stylized, gray-outlined human figures of varying heights and builds, arranged in a group. The figures are simple, with no facial features or clothing details, just smooth, rounded shapes. They are positioned in the lower-left and center of the slide, overlapping slightly.

Chapter 8

General Discussion

General discussion

The present thesis focused on the recruitment of new blood donors in the Netherlands. The project included three studies targeting the correlates of blood donation, using the Theory of Planned Behaviour (Ajzen, 1991, 1998) as a theoretical framework, and four studies targeting donor recruitment strategies. The first studies of this project were conducted to reveal the determinants of blood donation intentions. Based on the results of these studies, we continued with two lines of research. First, we focused on improving the blood donor recruitment leaflets, the conventional method of recruitment. Second, we studied the possibility of a new recruitment strategy by engaging blood donors in donor recruitment.

This final chapter will summarize and discuss the results of the studies presented in this thesis. Methodological issues concerning these studies will also be discussed, followed by the theoretical and practical implications of these studies and directions for future research.

Determinants of blood donation intentions

The first part of this thesis described the studies into the determinants of blood donation intentions. These studies were conducted among young, well-educated adults (students at Maastricht University; chapter 2); older, well-educated adults (students at the Open University; chapter 3); and young, less well-educated adults (working young adults; chapter 3). All studies were based on an extended version of the Theory of Planned Behaviour, i.e. a theoretical framework including the traditional TPB variables and descriptive and moral norm. Regardless of age and educational background, donation intentions were associated with perceptions regarding (i) expectations of pain and fear (affective attitude), (ii) perceived social approval to start donating blood (subjective norm), (iii) others donating blood (descriptive norm), (iv) the ability to actually donate blood (self-efficacy), and (v) responsibility to contribute to the blood supply (moral norm).

Although research suggests that many donors reported altruistic reasons for donating blood, the evidence was not consistent (Piliavin, 1990). Altruism - defined as helping someone with no explicit benefit for, and often costs to oneself (Dovidio, Piliavin,

Schroeder, & Penner, 2006) - might be a post-donation rationalization for the act of donating blood, as donors were asked afterwards why they had donated. In order to identify whether people start donating blood because of altruistic considerations, we included a measure of altruism in our studies targeting older, well-educated adults and young less well-educated adults (chapter 3). These studies showed that altruism did not have a direct effect on donation intention, but was mediated by moral norm. This means that participants scoring high on altruism expressed a stronger moral norm to donate, resulting in a more positive intention to start donating blood. Thus people's beliefs about blood donation are the key antecedents of intention; personality characteristics, like altruism, do not have a direct impact on intention to donate blood. It thus seems that altruism is more likely to be a post hoc explanation for donating, than an explicit start motivation.

Page, Bennet, Carter, Smith, and Woodmore (1997) suggested that fear of blood and/or needles may negatively influence donation attitudes and intentions. Studies among non-donors have shown that fear was often mentioned as a reason for non-donation (e.g., Piliavin & Callero, 1991). To better understand the impact of fear for blood and/or needles, we included a measure of fear in the study targeting less well-educated young adults (chapter 3). It turned out that the association between fear and donation intentions was mediated by both affective attitude and self-efficacy. Participants high in fear for blood and/or needles had a more negative affective attitude and experienced less self-efficacy to donate, resulting in a lower intention to start donating blood. Both studies showed that proximal determinants are better predictors of intention than more distal determinants, like altruism and fear for blood and/or needles.

The results of these studies are in line with international studies (Armitage & Conner, 2001b; Giles & Cairns, 1995; Giles, McClenahan, Cairns, & Mallet, 2004; Godin, Sheeran, Conner, Germain, Blondeau, Gagné, Beaulieu, & Naccache, 2005) and lead to two lines of research, as targeting subjective and descriptive norm requires a different uptake than targeting affective attitude, self-efficacy, and moral norm. The latter can be targeted using recruitment leaflets, the traditional recruitment method employed by Sanquin Blood Bank. To enhance subjective and descriptive norms, however, the visibility of blood donors and blood donation needs to be increased. Donors can do this by sharing their donating experiences with others and talking more about blood donation.

Blood donor recruitment leaflets

The results of the first studies showed that affective attitude, self-efficacy, and moral norm are important correlates of blood donation intentions. This implies that recruitment materials should reduce expectations of pain and fear for blood and/or needles (affective attitude), enhance self-efficacy to donate blood, and activate a moral norm to donate; raising the question whether current recruitment materials do target these determinants. As Sanquin Blood Bank commonly uses leaflets to recruit new donors, we conducted a content analysis of the two most recent leaflets. A coding manual was developed before conducting the content analysis distinguishing theory-based categories and common-sense categories. Theory-based categories reflected the determinants found to influence blood donation intentions, i.e. affective attitude, subjective norm, descriptive norm, self-efficacy, and moral norm. Common-sense categories were derived from older leaflets and were included to make sure all the information could be assigned to a category (exclusive categories; Krippendorff, 1981).

The content analysis revealed that both recruitment leaflets were mainly aimed at knowledge transfer as the leaflets predominantly included information targeting knowledge about blood donation and hardly any information targeting the blood donation determinants. Both leaflets included some information referring to moral norm (e.g. 'Donating blood, you cannot do less'). Affective attitude (e.g. 'there is no risk for infection for the donor') and self-efficacy to register as blood donor ('Call us') were both targeted once in the 'For you just a minute' leaflet.

To determine the effect of these leaflets on readers' willingness to donate blood, an experimental study was conducted (see chapter 4). Participants were asked to read one of the two Sanquin leaflets or no leaflet at all (control group) and completed a questionnaire assessing their knowledge and opinions about blood donation. The results showed that both leaflets were effective in increasing knowledge about blood donation, which makes sense as the leaflets were mainly directed at knowledge transfer. The leaflets were not able to change the blood donation determinants and to recruit new donors, as they hardly included determinant-relevant information. It has to be noted that the leaflets were developed for a broader public than the students that participated in this study.

In order to explore whether the effectiveness of the recruitment leaflets could be improved by including theory-based strategies to influence the determinants of blood donation intentions, we conducted a study addressing the improvement of recruitment leaflets (see chapter 5). We developed a theory-based version of the recruitment leaflet for this study. This version included affective attitude information, self-efficacy information, and moral norm information. Modelling (Bandura, 1997, 1998) and new arguments (Petty & Cacioppo, 1986; Witte, 1995) were mainly used to target these determinants. Affective attitude, for example, was targeted in a role model story. A young, female, first-time donor explained that the nurse was very friendly and comforting and that donating blood was not as frightening and painful as she had expected. To target self-efficacy, we included a list of suggestions to make donation easier. We also included role model stories explaining how they coped with being nervous and tense and with venipuncture. Moral norm information was enhanced by including arguments like: 'blood that you can give' and a male role model explaining he felt a moral norm to contribute.

Participants were invited to the lab and asked to read either the standard Sanquin leaflet, the theory-based version of this leaflet, or no leaflet at all. They also completed a questionnaire assessing the blood donation determinants and intention. The results showed that the theory-based leaflet resulted in a more positive affective attitude and reading either one of the leaflets resulted in a more positive self-efficacy to donate blood in general. The leaflets did not affect self-efficacy to manage tension and nerves, self-efficacy to manage possible negative consequences, and moral norm to donate; neither did they affect donation intentions. It is possible that the self-efficacy information regarding managing nerves and tension and managing possible negative consequences was not read, as this was targeted on the back of the leaflet. It is also possible that a leaflet is not the suitable medium for targeting self-efficacy. More research is needed to determine whether the leaflets were not carefully read, whether the determinant-relevant information included was not sufficiently targeted, or whether leaflets are not suitable to recruit new blood donors.

In both experimental studies, participants were given the opportunity to immediately register as blood donor by returning the application form included in the questionnaire in a sealed envelope. In the study described in chapter 4, 10 participants used this possibility, in the chapter 5 study, 24 participants immediately registered as blood donor. There were

no differences between the conditions for registration behaviour, although participants who registered had considered blood donation more seriously than those who did not register. Facilitating registration by providing an application form and return envelope was enough for these participants to take action. It is worth studying if distributing the recruitment leaflets (with the registration form attached) can also function as a cue to action for motivated non-donors in the general population.

Even though the leaflets might facilitate registration as a blood donor, they are not very effective in motivating non-donors to do so. Recruitment of new blood donors might benefit from strategies other than leaflets. One of the possibilities is to engage current blood donors in donor recruitment.

Donors recruiting new donors

The first studies in this thesis showed that subjective and descriptive norms are important correlates of blood donation intentions, in addition to affective attitude, self-efficacy, and moral norm. The previous studies have focused on targeting the latter determinants, the 'donors recruiting new donors' study focused on targeting subjective and descriptive norms. Chapter 6 described a study to reveal whether donors are willing to engage in donor recruitment and which determinants influence this willingness, as donors can increase non-donors' subjective and descriptive norms. This study was based on an adapted version of the TPB. The results showed that more than half of the donors were willing to engage in donor recruitment. Self-efficacy to recruit new donors, cognitive attitude towards engaging in donor recruitment and having pleasant experiences with the blood bank were the most important determinants of intention to engage in recruitment. Donors also indicated to appreciate receiving supportive materials to aid donor recruitment. It thus seems worthwhile to study the possibility of engaging donors in donor recruitment.

To assist donors engaging in donor recruitment, we developed the 'donors recruiting new donors' material. This material consisted of a theory-based leaflet and a series of 5 postcards. Based on the results of the study described in chapter 6, cognitive attitude, self-efficacy, and recruitment responsibility were targeted in the leaflet. To target cognitive attitude, for example, we used arguments (Petty & Cacioppo, 1986; Witte, 1995) and modelling (Bandura, 1997, 1998). This resulted in a leaflet introduction explaining

that blood donors can be of assistance in recruiting new blood donors, explaining the target behaviour in greater detail (e.g. talking about blood donation, sharing personal experiences, explaining the need for new donors, and asking others to consider blood donation), and role model stories of donors talking about their recruitment experiences. To change self-efficacy, we also used arguments (Petty & Cacioppo, 1986; Witte, 1995) and modelling (Bandura, 1997, 1998), resulting in suggestions to introduce blood donation to the conversation and stimulating donors to consider whom to ask and when and how to do this. One of the role models showed a mastery experience by first struggling with starting a conversation about blood donation, and later explaining how she managed to ask others. A list of frequently asked questions by non-donors was included to enhance self-efficacy in answering questions about blood donation. To change recruitment responsibility, we included information that non-donors have often never considered blood donation, that more publicity can stimulate non-donors to consider it, and that donors can increase this publicity by talking about blood donation (arguments; Petty & Cacioppo, 1986; Witte, 1995). The postcards were intended as a cue to action for both donors (to talk about blood donation and ask others) and for potential donors (to register), they also facilitated registration as the postcards could be used as registration cards.

The study described in chapter 7 was conducted to evaluate the effectiveness of the 'donors recruiting new donors' material. Donors who visited one of the blood banks in the south-eastern part of the Netherlands in May or June 2007 were invited to participate. These donors received three questionnaires: a first questionnaire with their call to donate and a second and third questionnaire one and six weeks after their donation, respectively. At the blood centre, donors either received (1) the complete 'donors recruiting new donors' material, i.e. both the leaflet and the postcards, (2) the postcards only, or (3) they received nothing (control group). The results of this study showed that simply asking donors to engage in donor recruitment was enough to engage donors in recruitment at one-week follow-up. At six-week follow-up, however, donors who had received the material had talked more about blood donation and they had asked more people to consider blood donation compared to donors in the control group. Donors who had received both the theory-based leaflet and the postcards, however, were more successful in recruiting new donors than both donors receiving the postcards only and donors receiving no information at all. The 'donors recruiting new donors' campaign therefore seems a fruitful approach to recruit new donors.

Methodological issues

This section addresses several methodological issues of the studies presented in this paper. At first, the studies into the determinants of blood donation intentions were cross-sectional surveys. These studies revealed the correlations between intention to donate blood and possible predictors, but do not imply causality. Another limitation is that participants were self-selected and the studies might suffer from selection bias. We tried to reduce this selection bias by stressing in the invitation to participate that we would like to know the person's opinion about blood donation, positive or negative, whether they were blood donors or had never considered blood donation. We also stressed that the questionnaires were anonymous and that we could not trace the answers back to a person. A related problem in surveys, and especially in pro-social behaviours like blood donation, is social desirability. Participants might be inclined to answer the questions with social desirable answers instead of their true opinion, for example saying that blood donation is very important, while they do not believe this. To minimize the effects of social desirability, we explained that there were no good or false answers, only personal opinions. Stressing that questionnaires were anonymous should also reduce social desirability effects.

A limitation of these studies was that we included intention to donate as outcome measure and not actual behaviour. Although intentions are good predictors of behaviour in general (Godin & Kok, 1996) and in the context of blood donation (Armitage & Conner, 2001b; Giles & Cairns, 1995), intention and behaviour do not correspond one-on-one. Barriers can prevent translating intentions into action.

Chapter 4 described a content analysis onto the two Sanquin blood donor recruitment leaflets, followed by an experiment evaluating the effectiveness of these leaflets. Chapter 5 evaluated the effectiveness of the adapted version of the most recent recruitment leaflet. Both experimental studies only targeted students at Maastricht University. Although an important target population for Sanquin Blood Bank, these students are not comparable to the general population as they are better educated and more familiar with processing written information. For students, information included in the leaflet might not be relevant, decreasing their motivation to read the leaflet carefully.

Another caveat of the leaflet studies is that we did not monitor participants while reading the leaflet. The adapted version of the recruitment leaflet was not effective in enhancing self-efficacy to manage tension and nerves and self-efficacy to manage possible negative consequences. It is possible that participants did not read this information as it was presented on the backside. It is also possible that providing non-donors with written information to increase donation self-efficacy is not an appropriate method to increase self-efficacy. Written role model stories turned out to be an effective method to reduce expectations of pain and fear (affective attitude), but not to increase donation self-efficacy. The question whether the methods to change self-efficacy were not adequately translated into leaflet content or whether a leaflet is not suitable to increase donation self-efficacy remains.

Moreover, the questionnaire assessing participants' opinions about blood donation and intention to start donating was completed immediately after reading the leaflet, ignoring the possibility of a delayed or sleeper-effect. We do not know whether the leaflet triggers participants to consider blood donation seriously, which might affect their opinions and intention in a later stage.

Donors participating in the 'donors recruiting new donors' field study (chapter 7), were asked to complete a questionnaire 3 times, the last questionnaire was completed 6 weeks after their visit to the blood bank (the moment they received the 'donors recruiting new donors' material). This study relied on self-reported behaviour, donors reported how often they had talked about blood donation, how many others they had asked and how many of the people they had asked indeed had registered as a new donor. With respect to privacy and anonymous data analyses, we did not ask donors for the names of the people they had asked to consider blood donation. Therefore, we could not control the number of actual registrations. As new donors can register online, by telephone, using regular registration forms (included in the recruitment leaflets), and the 'donors recruiting new donors' postcards; and as these postcards were used in two experimental conditions, it was impossible to design a system tracking all new registrations per condition (leaflet plus postcards, postcards alone, control). We do know, however, that 78 new donors registered using the postcards. Another problem with self-reported behaviour in this study is that donors were asked whether the people had indeed registered or not. To know this,

potential donors needed to inform the donor about their decision and action. A 6-week follow-up is fairly short for assessing this, as current donors do not only have to have the opportunity to talk about blood donation and to ask others to consider it, but these potential donors also need time to think about it, decide whether to register or not, and inform the donor about their decision.

Donors were asked to complete 3 questionnaires concerning their opinions, intention, and behaviour towards engaging in donor recruitment. Repeatedly filling out questionnaires can affect behaviour, the mere measurement effect. Godin, Sheeran, Conner, and Germain (Godin, Sheeran, Conner, & Germain, 2008) showed that merely sending donors a questionnaire about blood donation increased their donation frequency. The size of the measurement effect could have been established by including additional conditions in which participants would only complete the follow-up questionnaire (after receiving the leaflet plus postcards, the postcards alone, or nothing at all). Unfortunately, this was not possible for logistical reasons and time pressures.

Theoretical implications

The studies presented in this thesis were based on an extended version of the Theory of Planned Behaviour (TPB; (Ajzen, 1991). This theory has been used to explain health behaviour in general (Armitage & Conner, 2001a; Godin & Kok, 1996) and in the context of blood donation (Armitage & Conner, 2001b; Giles & Cairns, 1995; Giles et al., 2004; Godin et al., 2005). In short, the TPB states that intention is the most proximal determinant of behaviour. Intention, in turn, is determined by attitude, subjective norm, and perceived behavioural control. In this thesis we used an extended version of the TPB, we measured both affective and cognitive attitude, included a measure of descriptive norm next to subjective norm, measured self-efficacy instead of perceived behavioural control, and included a measure of moral norm.

In some studies we extended the TPB with measures of altruism and blood/needle fear (chapters 2-3) or we employed measures of anticipated reactions instead of subjective norm (chapter 6). Overall, the extended version of the TPB proved to be a suitable framework in the context of blood donation in the Netherlands, explaining

between 41-46% of blood donation intentions and 45% of intention to engage in donor recruitment. The TPB revealed which determinants were the most important predictors of intention and, in this way, guided the development of interventions to recruit new donors or to engage donors in donor recruitment.

Both altruism and fear for blood and/or needles did not directly impact on intention, but were mediated by moral norm (altruism) and affective attitude and self-efficacy (fear). This shows that distal variables (e.g. altruism or fear for blood/needles) affect proximal variables (like moral norm or attitude and self-efficacy), which influence intention (Ajzen, 1991).

The 'donors recruiting new donors' material targeted the TPB determinants underlying recruitment intentions, the results showed that the material influenced intention to recruit new donors at one-week follow-up. At six-week follow-up, behaviour was predicted by intention. These results showed that intention does influence behaviour, and that intention, in turn, is influenced by the behavioural determinants targeted in the 'donors recruiting new donors' leaflet (in this case, cognitive attitude, self-efficacy, and recruitment responsibility).

Practical implications

The results of the studies presented in this thesis suggest that using donor recruitment leaflets is not the most effective strategy for recruiting new donors. At the moment, leaflets are only effective because they can function as a cue to action for motivated non-donors. They were not able to change non-donors' motivation to become donors. Including theory-based information in the leaflets did not improve recruitment success; although it is worth studying if the blood donation determinants were not successfully targeted in the leaflet or that leaflets are not the most suitable medium for donor recruitment, before dismissing leaflets as a recruitment strategy.

The 'donors recruiting new donors' campaign was a more successful recruitment strategy. Donors who received both the theory-based leaflet and the postcards successfully recruited new blood donors. It is worthwhile to invest in implementing the 'donors recruiting new donors' campaign at blood centres with decreasing numbers of donors. Training blood

bank staff or volunteers to personally ask donors to engage in donor recruitment, instead of handing an envelope with all the information, might even increase effectiveness.

One of the benefits is that a 'donors recruiting new donors' campaign can be implemented on the blood centres with the most urgent need for new donors and the campaign can be paced by not asking all donors simultaneously to engage in recruitment. This way, new donor registrations can be easily processed and new donors do not have to wait a long time before making their first donation. These new donors can be invited to participate in future 'donors recruiting new donors' campaigns.

Future research

As already mentioned, more research is needed before deciding whether recruitment leaflets should be used in future campaigns or whether they should be dismissed. In contrast to our results, France and colleagues were able to enhance attitude, self-efficacy, and intention to donate blood using an information leaflet, although their leaflet was more lengthy and detailed than the recruitment leaflets used in our studies, it showed that leaflets can be used to enhance blood donation determinants and intention (France, Montalva, France, & Trost, 2008).

This thesis showed that providing an application form with the questionnaire facilitated registration and resulted in new donor registrations. It is worth studying whether the registration form included in the leaflet has a similar 'triggering' effect on registration, and whether this effect also arises in the general population instead of a study setting. Recruitment leaflets might function as a cue to action for those who already intend to start donating blood.

Future research is also needed to determine if the leaflets do have a long-term effect. In these studies, participants completed the questionnaire immediately after reading the leaflet. More time may be needed to thoroughly process the information presented in the leaflet, before it can have an effect on the blood donation determinants and intention. It is also worth studying whether participants carefully read the theory and evidence-based version of the recruitment leaflet, as the self-efficacy information was presented on the back of the leaflet. If this information was not read, more effort is needed to improve

the design of the leaflet. If the information was read, it is important to study whether self-efficacy was targeted strong enough or whether leaflets are not the most suitable medium for targeting self-efficacy in the context of blood donation. More research is also needed with respect to information targeting moral norm. Before being able to target moral norm sufficiently strong, it is necessary to determine how moral norms are activated.

Even if the results of these studies result in a recruitment leaflet effectively targeting affective attitude towards blood donation, self-efficacy to donate blood, and moral norm to contribute to the blood supply, this may not be enough to affect intention to donate blood, as two TPB determinants that were found to be relevant, i.e. subjective and descriptive norms, were not targeted. If this is the case, it is worth to combine both the recruitment leaflets and the 'donors recruiting new donors' campaign. Donors could be asked to engage in donor recruitment and receive, in addition to the 'donors recruiting new donors' material, some theory-based recruitment leaflets (aimed at recruiting non-donors) to give to potential donors among their family and friends. Potential donors thus receive the recruitment leaflet with information targeting affective attitude, self-efficacy, and moral norm, and subjective and descriptive norms are targeted by the donor they received the leaflet from.

Donors participating in the 'donors recruiting new donors' study received the envelope with the study material and an accompanying letter at the registration desk. From a practical point of view, it would be interesting to know whether personally asking donors to engage in donor recruitment is more effective than just handing them an envelope. Personal contact is an important motivator to donate blood (Piliavin, 1990), it might also be an important motivator to do something extra for the blood bank, like recruiting others. Personal contact also might positively affect the perceived experiences with the blood bank, which is a determinant of intention to engage in recruitment.

Some additional questions were raised by the 'donors recruiting new donors' study concerning donor retention. Are donors who actively engage in donor recruitment more loyal donors after one year than donors who did not engage in recruitment or donors who did not participate in this study? Does engaging in donor recruitment influence the development of a self-identity as blood donor? A self-identity develops with continued donation and descriptions of the self as donor (Charng, Piliavin, & Callero, 1988; Piliavin

& Callero, 1991), talking about blood donation, sharing own donation experiences, and being called the ambassador of the blood bank might stimulate the development of a self-identity as blood donor. It would be interesting to answer these questions as the 'donors recruiting new donors' campaign might not only have an impact on donor recruitment, but also on donor retention.

One of the determinants of blood donation intention is moral norm. At the moment, little is known about activating moral norms. As moral norms do not only affect blood donation intentions, but a wide range of pro-social behaviours, like donating bone marrow or money, and engaging in pro-environmental behaviours like recycling and reducing car use, it is worth studying how moral norms develop and how they can be activated.

Conclusion

This thesis illustrates the value of theory and evidence-based behavioural change interventions and is a good example of applied psychology. The first studies showed that blood donation intentions are predicted by affective attitude, subjective and descriptive norm, self-efficacy, and moral norms. Current recruitment materials were not theory and evidence-based and did not have an impact on these determinants. Consequently, these leaflets were not very effective (Los, 2006).

The limited success of enhancing the leaflet's effectiveness by including determinant-relevant information raises the question whether leaflets are the most suitable medium for donor recruitment and lead to the development of a different recruitment strategy: The 'donors recruiting new donors' campaign. This strategy proved more successful in recruiting new donors and is now implemented in the South of the Netherlands.

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Summary

In the Netherlands, blood supply and demand are in precarious balance. To ensure a sufficient supply of safe blood in the long run, new blood donors need to be recruited. At the moment, recruitment campaigns are not very effective, as they have not been theory and evidence-based. This thesis describes the development and evaluation of existing and new recruitment campaigns.

Chapter 1 provides a general introduction into blood donation and the blood donation system in the Netherlands. At the start of this project, a wide variety of blood donor research was available. Studies describing the typical donor, studies focusing on donor retention and donor recruitment, and few studies into the determinants of blood donation are presented in this chapter. The Theory of Planned Behaviour is included as this theory provided the theoretical framework for the studies presented in this thesis. Finally, an overview of the thesis is given in this chapter.

Chapters 2 and 3 describe studies into the determinants of blood donation intentions among different Dutch populations. The study described in chapter 2 invited students at Maastricht University to complete a questionnaire. These students were young and well-educated. To generalise the findings to older and less well-educated samples, we conducted two additional studies, described in chapter 3. These studies invited students at the Open University to participate, as this was an older, well-educated sample and a group of young adults with a lower education. The results of these studies showed that donation intentions are similar across age and educational levels. Intention to donate blood was influenced by affective attitude (expectations of fear and pain); subjective norm (approval of others to donate blood); descriptive norm (knowing other blood donors); self-efficacy (feeling able to donate blood); and moral norm (feeling a responsibility to contribute to the blood supply).

Based on the results of the studies into the determinants of blood donation intentions, we continued with two lines of research: the blood donor recruitment leaflets and engaging donors in donor recruitment. Three determinants: affective attitude, self-efficacy, and moral norm can be targeted in blood donor recruitment leaflets. Subjective and descriptive norms can be enhanced by donors talking about their blood donation

experiences and being role models for others. The studies focusing on the blood donor recruitment leaflets are described in chapters 4 and 5; the 'donors recruiting new donors' studies are described in chapters 6 and 7.

Although leaflets are commonly used by the blood bank to recruit new donors, they have never been analysed for their content and effectiveness. Based on the results of earlier studies, leaflets are expected to be most effective when they target affective attitude, self-efficacy, and moral norms to donate. Chapter 4 describes a content analysis to assess whether the two most recent recruitment leaflets targeted these determinants. One of the leaflets, the 'Red gold' leaflet was widespread at the start of this study, the other leaflet, 'For you just a minute, for me a lifetime' was a newly developed leaflet and not yet available to the public. The coding manual developed for this study contained the instructions for coders and the categories to be coded for. These categories were either theory-based (reflecting the blood donation determinants) or common-sense categories. The content analysis revealed that the leaflets were mainly aimed at knowledge transfer as 87% of the content could be assigned to common-sense categories and only 13% to theory-based categories. A subsequent experiment invited students to read either one of the leaflets or no leaflet at all (control group) and to complete a questionnaire assessing their opinions and knowledge about blood donation. This experiment confirmed the results of the content analysis, reading a leaflet indeed increased knowledge about blood donation, but did not change blood donation determinants and intention.

Chapter 5 describes a study aimed to enhance the recruitment effectiveness of the blood donor recruitment leaflets. Information targeting affective attitude, self-efficacy, and moral norm was included in the theory-based version of the leaflet, using role model stories and arguments. Students were invited to participate in this study and to read the standard version of the 'For you just a minute' leaflet, the theory-based version of this leaflet, including information targeting affective attitude, self-efficacy, and moral norm, or no leaflet at all (control group). The results of this study showed that the theory-based version of the leaflet successfully increased affective attitude towards blood donation. Both leaflets were able to increase self-efficacy to donate in general. Unfortunately, the theory-based version of the leaflet was not able to increase donation-specific self-efficacy, moral norm, and intention to donate. More research is needed to determine whether these

determinants need to be targeted more strongly or that leaflets are not the most suitable medium to change blood donation determinants and intentions.

As the recruitment effectiveness of leaflets is questionable, we explored another recruitment strategy. Chapter 6 describes a study to reveal whether blood donors are willing to engage in donor recruitment themselves by informing family, friends, and colleagues about blood donation and asking them to consider registering as blood donor and which determinants would influence this willingness. The results showed that more than half of the donors (57%) would engage in donor recruitment, the most important predictors of intention to recruit new donors were self-efficacy to initiate a conversation about blood donation, to answer questions about donation, and to ask others to consider donation; cognitive attitude, believing that it is good and important to talk about blood donation; having pleasant experiences with the blood bank and blood bank staff; and experiencing some responsibility to engage in donor recruitment. The results of this study were used to develop supportive materials to help donors translating their good intentions to recruit new donors into action.

The effectiveness of the 'donors recruiting new donors' material was evaluated in a field study, described in chapter 7. The material consisted of a theory-based leaflet and a series of 5 postcards which could be used to initiate a conversation about blood donation and potential donors could use these cards to register. Donors who received a call to donate blood during the study period were invited to participate in this study and complete three questionnaires. They received the first questionnaire before visiting the blood bank and two questionnaires one and six weeks after their visit. When visiting the blood bank, donors were assigned to one of three conditions, they received both the leaflet and the postcards, the postcards alone, or no information at all (control group). The results at one-week follow-up showed that donors who had received the 'donors recruiting new donors' material (either the leaflet plus postcards or the postcards alone) had a higher intention to recruit and reported more recruitment activities than control group donors. At six-week follow-up, donors receiving the material again reported to have asked more people to consider donation than control group donors. Donors who received both the leaflet and the postcards also reported to have talked more about donation and made more recruitment attempts, and these donors were more successful in recruiting new donors,

as they reported more new donor registrations, than both the donors who received the postcards alone and the control group donors. A 'donors recruiting new donors' campaign, supplying donors willing to engage in recruitment with both the theory-based leaflet and the postcards, thus seems a fruitful approach to donor recruitment.

Finally, chapter 8 provides an overview of this thesis and summarizes and discusses the studies presented, along with the methodological issues concerning these studies, the theoretical and practical implications of these studies, and the implications for future research.

Samenvatting

In Nederland zorgt Sanquin Bloedbank voor de bloedvoorziening. Momenteel zijn de vraag naar en het aanbod van bloed voor transfusies en medicijnen in evenwicht. Om ook voor de lange termijn voldoende veilig bloed te kunnen garanderen, is het belangrijk om nieuwe bloeddonsors te werven. Vooral wervingsfolders worden gebruikt om nieuwe donors te werven. Deze folders zijn echter niet gebaseerd op wetenschappelijke kennis en daarom niet erg succesvol in het werven van nieuwe donors. Dit proefschrift beschrijft de ontwikkeling en evaluatie van nieuwe en bestaande wervingscampagnes.

Hoofdstuk 1 begint met een algemene introductie over bloeddonatie en het bloeddonsorsysteem in Nederland. Vervolgens wordt een overzicht gegeven van het donoronderzoek dat eerder is uitgevoerd. Dit onderzoek kan worden verdeeld in een aantal onderdelen. De eerste groep studies richtte zich op het beschrijven van de prototype donor en op de redenen die donors en non-donors geven. De tweede groep studies richtte zich op donorbehoud en het voorkomen van uitval van donors. Een andere groep studies keek naar verschillende strategieën om nieuwe donors te werven. Ten slotte richtten enkele studies zich op de factoren die bloeddonatie kunnen voorspellen. Deze studies, en de studies die in dit proefschrift beschreven worden, gebruikten de theorie van gepland gedrag als theoretisch kader. Deze theorie wordt derhalve ook in hoofdstuk 1 beschreven. Ten slotte biedt dit hoofdstuk een overzicht van het proefschrift.

Aan het begin van dit project was het belangrijk om te achterhalen welke factoren een rol spelen bij de beslissing om bloeddonor te worden. Om vast te stellen welke factoren dit zijn hebben we een drietal studies gedaan bij verschillende populaties in Nederland. Voor de studie die in hoofdstuk 2 wordt beschreven, werden studenten aan de Universiteit Maastricht uitgenodigd om deel te nemen. Voor de studies in hoofdstuk 3 werden studenten aan de Open Universiteit Nederland en werkende jongeren uitgenodigd. Alle deelnemers werden uitgenodigd om een vragenlijst in te vullen. De resultaten lieten zien dat bij alledrie de groepen dezelfde factoren een rol spelen. Deze factoren zijn:

- 1) verwachtingen van pijn en angst (oftewel affectieve attitude),
- 2) of anderen bloeddonatie goedkeuren (subjectieve norm),
- 3) of anderen bloeddonor zijn (descriptieve norm),

- 4) in staat zijn om bloed te geven (self-efficacy)
- 5) het gevoel van verantwoordelijkheid om bij te dragen aan de bloedvoorraad (morele norm).

Deze factoren kunnen in twee groepen verdeeld worden en vormen de basis voor de twee onderzoekslijnen. De eerste groep bevat de factoren affectieve attitude, self-efficacy en morele norm. Deze factoren kunnen aangesproken worden in de wervingsfolder. De studies naar de wervingsfolder worden beschreven in de hoofdstukken 4 en 5. De andere groep bevat subjectieve en descriptieve norm. Deze factoren kunnen verhoogd worden wanneer bloeddonors over hun ervaringen vertellen en een rolmodel voor anderen zijn. Met andere woorden; donors helpen bij de donorwerving door zelf nieuwe donors te werven (donor-werft-donor).

Ondanks het feit dat Sanquin Bloedbank gewoonlijk folders gebruikt om nieuwe donors te werven, zijn deze folders nooit geëvalueerd over hun inhoud en effectiviteit. Op basis van de resultaten van eerdere studies verwachtten we dat de folders het meest effectief zijn wanneer deze zich richten op de bloeddonaatiefactoren (affectieve attitude, self-efficacy en morele norm). Hoofdstuk 4 beschrijft een contentanalyse om vast te stellen of deze factoren in de folder genoemd worden. Hiervoor zijn de twee meest recente folders gebruikt. De 'Rood goud' folder was wijdverspreid aan het begin van deze studie, de 'Voor jou maar even, voor mij een heel leven' folder was pas ontwikkeld en nog niet beschikbaar voor het grote publiek. Voor deze studie werd een codeerschema ontwikkeld met instructies voor de codeurs en de categorieën die gecodeerd moesten worden. Deze categorieën waren gebaseerd op theorie (en weerspiegelen de bloeddonaatiefactoren) of op kennis over bloeddonatie. Uit de resultaten van de contentanalyse bleek dat de folders voornamelijk gericht zijn op kennisoverdracht. Te weten 87% van de inhoud van de folder werd toegeschreven aan de kennis categorieën en slechts 13% aan de op theorie gebaseerde categorieën. Voor een vervolgstudie werden studenten uitgenodigd om deel te nemen. Zij werden in drie groepen verdeeld; de eerste groep las de 'Rood Goud' folder, de tweede groep las de 'Voor jou maar even , voor mij een heel leven' folder en de derde groep, de controle groep, las geen folder. Vervolgens vulden de studenten een vragenlijst in om hun kennis en mening over bloeddonatie te meten. Dit experiment bevestigde de resultaten van de contentanalyse, namelijk de folders verbeteren wel de kennis over

bloeddonatie, maar de mening over bloeddonatie en de intentie om bloeddonor te worden, veranderden niet.

In hoofdstuk 5 wordt een studie beschreven om de effectiviteit van de wervingsfolder te verbeteren. Er werd informatie aan de folder toegevoegd die gericht was op de bloeddonaatiefactoren (affectieve attitude, self-efficacy en morele norm). Hiervoor werden rolmodelverhalen en nieuwe argumenten gebruikt. Studenten die uitgenodigd waren om mee te doen werden weer in drie groepen verdeeld. De eerste groep kreeg de standaard versie van de 'Voor jou maar even, voor mij een heel leven' folder te lezen, studenten in de tweede groep kregen de verbeterde versie van deze folder en studenten in de derde groep, de controle groep, kregen geen folder. Vervolgens vulden ze een vragenlijst in om hun mening over bloeddonatie te meten. Uit de resultaten blijkt dat studenten die de verbeterde folder lazen minder angst en pijn verwachtten (affectieve attitude) dan studenten die de andere folder lazen. Studenten die één van beide folders gelezen hadden, voelden zich beter in staat om bloed te geven (self-efficacy) dan studenten die geen folder gelezen hadden. Helaas slaagde de verbeterde versie van de folder er niet in om de self-efficacy om met nervositeit en mogelijke negatieve gevolgen om te gaan, te verhogen. Het gevoel van verantwoordelijkheid om bij te dragen aan de bloedvoorraad (morele norm) en de intentie om bloeddonor te worden werden ook niet verbeterd door het lezen van de verbeterde folder. Er moet nog meer onderzoek gedaan worden om te kijken of deze factoren beter aangesproken kunnen worden in de folder óf dat een folder misschien niet de meest geschikte manier is om bloeddonors te werven.

Aangezien de effectiviteit van wervingsfolders twijfelachtig is, hebben we nog naar andere wervingsstrategieën gekeken. Hoofdstuk 6 beschrijft een studie onder bloeddonors om te kijken of donors bereid zijn mee te helpen met donorwerving door hun vrienden, familie en collega's te informeren over bloeddonatie en aan hen te vragen of zij willen overwegen om bloeddonor te worden. Ook werd gekeken welke factoren hierbij een rol spelen. Uit de resultaten bleek dat meer dan de helft van de donors (57%) bereid is om mee te doen met een donor-werft-donor actie. De belangrijkste voorspellers van deze bereidheid zijn:

- 1) vertrouwen om zelf over bloeddonatie te beginnen, om vragen hierover te beantwoorden en om anderen te vragen om bloeddonatie te overwegen; (self-efficacy),

- 2) het belangrijk en goed vinden om over bloeddonoratie te praten (cognitieve attitude),
- 3) het hebben van prettige ervaringen met de bloedbank en het personeel,
- 4) een gevoel van verantwoordelijkheid om bij te dragen aan de donorwerving.

Deze resultaten hebben we gebruikt om folders te ontwikkelen om donors te helpen om hun goede voornemens om nieuwe donors te werven om te zetten in actie.

Om de effectiviteit van de donor-werft-donor actie te evalueren hebben we een veldstudie gedaan. Deze studie wordt beschreven in hoofdstuk 7. Het donor-werft-donor materiaal bestond uit een folder en een set van 5 ansichtkaarten. Deze ansichtkaarten konden donors gebruiken om over bloeddonoratie te beginnen en potentiële donors konden zich met deze kaarten aanmelden. Donors die een uitnodiging kregen om tijdens de studieperiode bloed te geven in Maastricht, Heerlen en Sittard werden uitgenodigd om deel te nemen aan de studie en drie vragenlijsten in te vullen. Zij ontvingen de eerste vragenlijst tegelijk met hun uitnodiging om bloed te geven. De volgende vragenlijsten kregen zij 1 en 6 weken na hun donatie. Tijdens hun bezoek aan de bloedbank werden ze verdeeld in drie groepen. De eerste groep kreeg de donor-werft-donor folder en de ansichtkaarten. De tweede groep kreeg alleen de ansichtkaarten en de derde groep kreeg geen informatie (de controle groep). De resultaten lieten zien dat het donor-werft-donor materiaal effectief is. Eén week na de donatie waren de donors die het materiaal hadden gekregen (de folder en de ansichtkaarten of alleen de ansichtkaarten) meer van plan om nieuwe donors te werven en hadden zij meer moeite gedaan om nieuwe donors te werven dan donors in de controle groep. Na zes weken hadden de donors die de folder en de ansichtkaarten hadden gekregen meer nieuwe donors geworven dan donors die alleen de ansichtkaarten of geen informatie hadden gekregen. De donor-werft-donor actie, waarbij donors die bereid zijn om mee te helpen met donorwerving, de donor-werft-donor folder en ansichtkaarten krijgen is dus een goede aanpak van donorwerving.

Tot slotte biedt hoofdstuk 8 een algemene discussie van de studies die in dit proefschrift worden beschreven. De studies om de bloeddonoratiefactoren te achterhalen, de studies naar de wervingsfolders en de donor-werft-donor studies worden achtereenvolgens besproken. Aansluitend worden de theoretische en praktische implicaties van deze studies besproken en mogelijkheden voor toekomstig onderzoek.

Dankwoord

Dankwoord

Een proefschrift schrijf je niet alleen

Na vier jaar onderzoek doen kan ik terugkijken op een leuke tijd. Het proefschrift is nu af, alleen het laatste (en misschien wel moeilijkste) stukje moet nog geschreven worden: het dankwoord.

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Curriculum Vitea

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