

Increasing first-time blood donation of newly registered donors using implementation intentions and explicit commitment techniques

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Vox Sanguinis

Background and Objectives Most blood donors stop donating blood at the beginning of their donor career. This intervention study aims to increase first-time return behaviour of newly registered donors using implementation intentions and explicit commitment techniques.

Materials and Methods Newly registered donors ($N = 937$) received an extra information sheet during their medical check-up wherein implementation intentions and explicit commitment techniques were tested. Donors were randomly assigned to either the control condition, information sheet only condition, information sheet with implementation intentions condition, information sheet with explicit commitment condition, or information sheet with both implementation intentions and explicit commitment condition. Logistic regression analyses examined actual first-time return behaviour after an appeal to donate blood.

Results Donors in the information sheet with both implementation intentions and explicit commitment condition had an 11.5% higher return rate than donors in the control condition. Logistic regression analyses revealed that the information sheet with both implementation intentions and explicit commitment condition significantly increased the odds on return behaviour compared with the control condition (OR = 1.65, 95%CI = 1.08–2.50).

Conclusion This study successfully increased actual first-time return behaviour of newly registered donors by using both implementation intentions and explicit commitment techniques.

Key words: commitment, implementation intentions, interventions, newly registered blood donors, return behaviour.

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Introduction

For blood establishments it is important that blood donors return for a donation. Unfortunately, many donors stop donating blood at the beginning of their donor career; for example, in the USA, 49% of first-time donors did not return within 6 years [1]. In the Netherlands, new donors initially schedule an appointment for an extensive medi-

cal screening test. At this first appointment, blood is tested but no donations are taken. Eligible donors are subsequently invited to give blood for the first time. Around 40% of these newly registered donors do not make a first-time blood donation within 6 months [2]. Previous research has paid considerable attention to understanding return behaviour of blood donors. Research showed that various barriers hinder new and regular blood donors to actually donate blood [3–6]. In the Netherlands, blood donors mentioned time constraints as the most important barrier for not being able to donate (again) [3]. Also for Dutch donors, planning failure was a consistent negative predictor to donate blood for the first,

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second and third time [6]. These barriers seem to fit in the psychological concept 'social inertia' [7]. Social inertia refers to the situation in which a person has a positive attitude towards a request, but does not take corresponding action due to a lack of urgency or motivation. In general, most donors have the intention to donate blood [8–10], but more effort is needed to stimulate them to return. It is therefore necessary to find solutions to overcome the barriers for not donating again, and bridge the gap between good intentions and behaviour.

Implementation intentions

A possible solution to overcome the barriers 'time constraints' and 'planning failure' are implementation intentions [11]. Implementation intentions are if-then plans ('When situation X occurs, then I will initiate behaviour Y') that link situational cues to goal intended behaviour. By forming implementation intentions, a person delegates control of the behaviour to situational cues. When a person encounters these cues, behaviour is automatically elicited. Implementation intentions are said to overcome problems, like failing to get started. For example, people especially face difficulties to initiate goal directed responses when a behaviour is not part of one's routine and the behaviour needs to be performed before a deadline [12]. This corresponds to the situation of newly registered Dutch donors who are invited to make a first-time blood donation within 2 weeks. In these circumstances, donors can benefit from a plan that spells out when, where and how to implement goal intended behaviour. Although previous research showed that implementation intentions increase the likelihood of attaining one's behaviour within a variety of health behaviours [12], to our knowledge, only two studies could be identified that tested the formation of implementation intentions among first-time donors to increase subsequent blood donations [13, 14]. One study showed that first-time donors, who formed implementation intentions to donate blood, were more likely to return for a donation [13]. In the other study, temporarily deferred first-time donors had to spell out implementation intentions to overcome barriers to return [14]. Results showed that donors in the implementation intention condition had a 19% greater chance to return for a donation.

Explicit commitment

Another technique that can be used to overcome the barriers 'time constraints' and 'planning failure', is creating commitment with the goal intended behaviour, in this case donating blood [11]. Goal intended behaviour is usually defined as a specification of a certain end-point of

behaviour or outcome, and has the following structure: 'I intend to reach Y'. Implementation intentions are subordinate to goal intended behaviour, specifying the when, where and how to reach that goal. Cialdini [15] stated that when a person makes a commitment to a certain behaviour, he or she is more willing to behave consistently with the promised behaviour. Therefore, it is desirable that blood donors make a commitment to donate blood before actually donating blood for the first time. Previous research showed that blood establishments successfully used phone calls to verbally commit donors to attend a blood drive [16, 17]. Another way to create strong commitment with the intended behaviour is by asking people to endorse a written statement, for example by confirming and signing a paper [15]. To our knowledge, as yet, the effectiveness of a written commitment to increase return behaviour of newly registered donors is unknown.

Implementation intention and explicit commitment

Previous research showed the effectiveness of implementation intentions and commitment techniques separately to successfully overcome the barriers and bridge the gap between intentions and behaviour. It might also be effective to use both implementation intentions and commitment techniques together to overcome barriers, like time constraints and planning failure. Ajzen *et al.* [18] tested both techniques in an intervention study wherein students had to watch TV newscasts in the next month. Results showed that students in the implementation intentions condition greatly increased performance of the intended behaviour, regardless whether the implementation intentions were generally specified (choose a week to watch the newscast) or specifically specified (choose a day to watch the newscast). Also, the commitment condition increased the performance of the intended behaviour, but there was no added value of using both techniques to increase watching the newscast.

Although the results of this empirical study do not advocate the added value of using the combination of both implementation intentions and commitment techniques in watching the newscasts, the outcome might be different for blood donation behaviour. Performing a behaviour, like watching the newscast (which can be performed at home and with less effort) is easier than donating blood. Donating blood is a volunteering act to save lives of other people.

In addition, people who give blood for the first time can experience feelings of distress or anxiety. Donating blood can be seen as a high cost behaviour. We therefore argue that it is meaningful to test both implementation

intentions and commitment techniques wherein people have to put more effort to reach a goal intended behaviour, like donating blood.

Current study

Further research needs to be done to investigate whether implementation intentions and explicit commitment are effective solutions to overcome the barriers for not donating blood for the first time. The current intervention study aims to increase first-time return behaviour of newly registered donors using implementation intentions and explicit commitment techniques. In this study, a newly registered donor is defined as someone who has been registered as a donor but has not donated yet [19]. The hypothesis is that newly registered donors, who form implementation intentions of their blood donation and/or, explicitly commit to donate blood, are more likely to make a first donation than donors who do not. There are no specific expectations as to which technique will be more effective; a single technique or the combination of both. Finally, a questionnaire was used to investigate to what extent the interventions changed the mind set of donors on relevant variables.

Materials and methods

Study procedure and participants

Figure 1 shows the regular invitation procedure for newly registered donors in the Netherlands. In the Netherlands, as well as in 12% of the blood establishments in other European countries, donors initially register via postal mail or blood bank website to become a blood donor, and then schedule an appointment for a medical donor-eligibility check-up. Before the medical check-up, all potential Dutch donors receive reading materials by postal mail wherein the invitation policy of the blood bank is clarified. At the first appointment, all newly registered donors fill out a medical questionnaire about their medical history and risk behaviour and three samples of blood are taken. Donors do not donate blood at this first appointment, as is common practice in the Netherlands. If donors are eligible, within 4–6 weeks they receive a personalized invitation card for their first blood donation via postal mail. Donors have a 2-week walk-in period to visit the blood bank and donate blood for the first time.

Figure 1 also shows the start of the intervention study. For the intervention study, an extra information sheet was added to the standard medical questionnaire. The intervention was conducted at five blood centres in the Netherlands. In the information sheet, the invitation procedure of the blood bank was clarified, and different

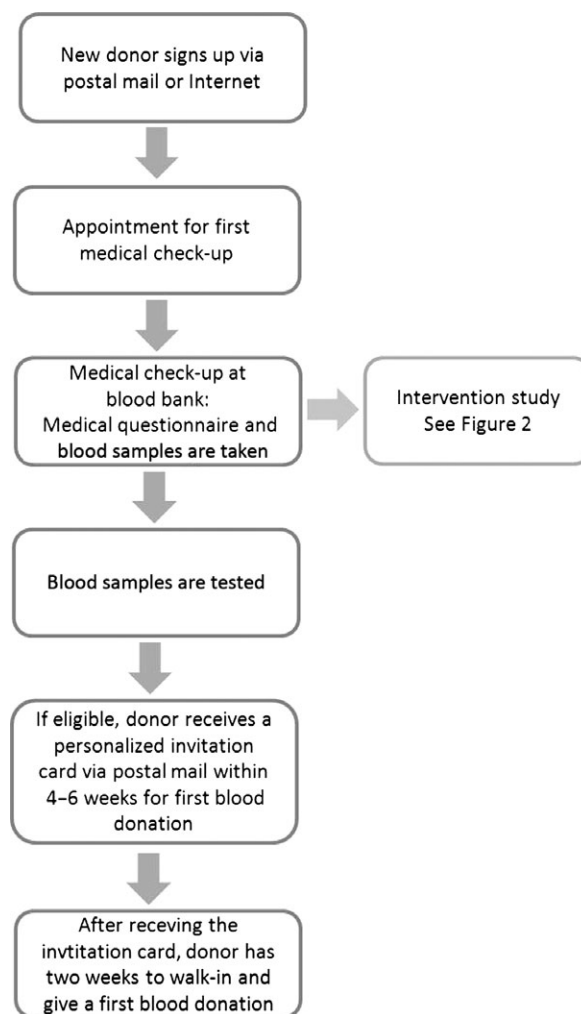


Fig. 1 Flow chart invitation procedure newly registered donors.

techniques aiming to influence donor behaviour were tested. Newly registered donors in the intervention study thought that the information sheet was part of the standard medical check-up procedure. After the information sheet, half of the donors also received a questionnaire about their donor motivation. Donors were told to hand out the medical questionnaire, information sheet and donor motivation questionnaire to the donor physician, and then three samples of blood were taken. The study was approved by the Medical Advisory Council of Sanquin Blood Supply.

The intervention study includes all newly registered donors who visited the blood bank between May 2012 and March 2013 for their first medical check-up ($N = 1064$). After cleaning the data, it appeared that some donors had already donated blood before. They were removed from the sample. Other donors did not donate the mandatory three samples of blood and were therefore

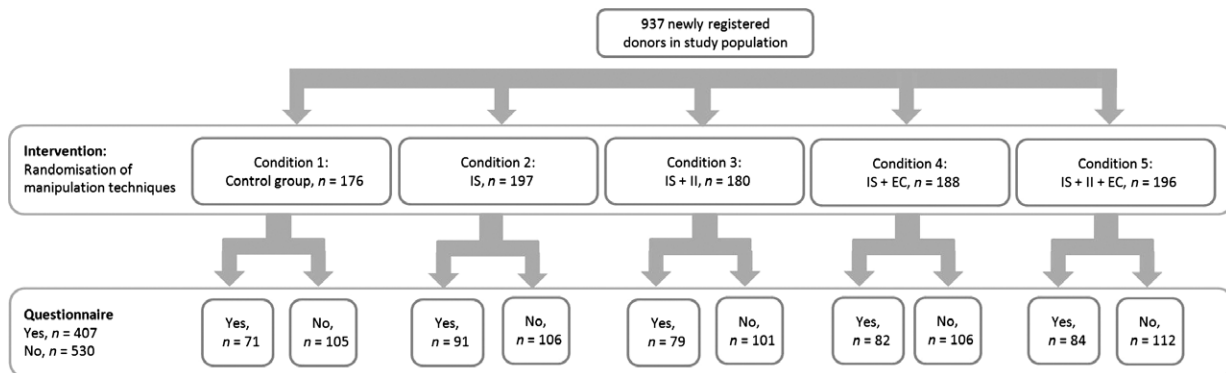


Fig. 2 Flow chart of randomization newly registered donors. IS, information sheet; II, implementation intentions, EC, explicit commitment.

removed from the sample. This left a group of 1009 donors. Furthermore, only those donors who filled out the implementation intentions and commitment questions on the information sheet were included ($N = 989$). A small number of donors were lost during the study, because they did not receive an invitation for their first donation ($n = 41$) or visited the blood bank *before* they received the invitation card to donate blood (walk-in donors, $n = 11$). Thus, the resulting sample for this study included 937 donors.¹

Information sheet

For the intervention study, an information sheet was designed on paper. The information sheet consisted of three parts: the invitation procedure of the blood bank, implementation intentions or explicit commitment. Donors received one of these parts or a combination of

these parts, or nothing at all (control condition), constituting a total of five conditions. At each blood centre the donor assistant assigned donors according to a random list to one of the following conditions (see also Fig. 2):

Condition 1: Control condition ($n = 176$). Donors in the control condition did not receive an information sheet and went through the standard medical check-up by filling out the medical questionnaire and donating three samples of blood.

Condition 2: Information Sheet only (IS; $n = 197$). To test the effect of the information sheet only, donors in this condition were asked to read on paper the information about the invitation policy of the blood bank. First, they were thanked for becoming a blood donor and the importance of donating blood was stressed. Then, it was made clear to the donor that they will be invited to donate blood by a personalized invitation card. This invitation card is valid for 2 weeks and it is important to give a first blood donation within these weeks. If they were not able to donate for the first time, it was preferred that they cancel their blood donation by phone, e-mail or via the blood bank website.

Condition 3: Information Sheet with Implementation Intentions (IS + II; $n = 180$). Donors in the IS + II condition received the same text as in the IS condition and were additionally asked to fill out the following two propositions: 'When I receive the invitation card I schedule a date and time in my agenda to donate blood on (opening hours of the blood bank)' and 'When I'm not able to donate blood within two weeks, I cancel my donation in the following way (answer options: e-mail, telephone call, or via the blood bank website)'. Each proposition was followed by several answer options. Donors could give more than one answer preference on paper (e.g. 'e-mail and telephone call').

Condition 4: Information Sheet with Explicit Commitment (IS + EC; $n = 188$). In the IS + EC condition,

¹A sample size calculation is used to include enough donors in each condition for this study. In the Netherlands, around 40% of newly registered donors do not make a first time blood donation within six months. Therefore we expected that 60% of the donors in the control condition would return for a donation. Previous literature among blood donors was consulted to calculate the expected effect of the intervention techniques in each condition. Godin *et al.* (2010) found that the implementation intention condition increased the frequency of donations over 1 year with 12%. In another study of Godin *et al.* (2012), participants in the implementation intention condition had a 19% greater chance of returning to donate blood again. Therefore we expected an average effect of 15% in an intervention condition. A sample size calculation with these numbers ($\alpha = 0.05$ and $\beta = 0.80$) indicated that we needed around 150 donors in each condition. During the study, we included more donors, because some donors would be excluded from the analyses (e.g. not passing the medical examination test or not filling out the whole information sheet). Therefore approximately 180 donors were included in each condition.

donors received the same introduction text as in the IS condition, concluding with the following sentences: 'I have understood the above information and I have the intention to give blood. I realize that the blood bank is counting on me when I am invited to donate blood'. Donors were then asked to sign and date the information sheet.

Condition 5: Information Sheet with Implementation Intentions and Explicit Commitment (IS + II+ EC; n = 196): In the IS + II + EC condition, donors were asked to read the information sheet, fill out both implementation intention questions, and sign and date the information sheet.

Questionnaire

Approximately half of the donors received a donor motivation questionnaire on paper after the information sheet ($n = 407$, see Fig. 2 for the distribution among different conditions). The questionnaire consisted of multiple topics, including variables about the intention to donate blood and whether donors were able to plan a donation in their daily life. Items measuring the variables intention and planning failure were chosen to be consistent with previously published items [6, 8, 20, 21]. Recent research has shown that Dutch donors who felt a pressure from the blood bank to donate blood were less likely to return for a donation [22]. To test whether donors would feel more pressure to donate after filling out the information sheet, the questionnaire contained an item that measured the variable 'pressure to donate blood'. All items were measured with a Likert-type format, with alternatives ranging from 1 (completely disagree) to 7 (completely agree). Composite scores were created so that higher scores represented higher levels of the variable.

Intention

Intention is a measure of the extent to which an individual is motivated to donate blood. Intention to donate blood was measured with the following two items: 'I want to be a blood donor for as long as I am allowed to' and 'I intend to give blood as long as my health permits it' (Cronbach's $\alpha = 0.75$).

Planning failure

Planning failure is a measure of the donors' perceived ability to plan their donation in their daily life. The following three items measured planning failure: 'It will sometimes happen that I miss an invitation to donate blood', 'In general, I expect that it will be difficult for me to make time to donate blood' and 'When I receive an invitation to donate blood, it will sometimes happen

that I postpone my invitation too long' (Cronbach's $\alpha = 0.63$).

Pressure to donate

Feeling pressure to donate blood was measured with the following item: 'I do not want to feel pressure to donate blood'.

Dependent variable

The dependent variable was the number of new donors visiting the blood bank to give a first donation (Yes/No), after receiving an invitation card. In the Netherlands, all blood donors receive an invitation card, asking them to come in and donate blood within a 2-week walk-in period. Although the invitation card is valid for 2 weeks, the blood bank also accepts the card 1 week after the 2-week walk-in period. For example, a donor who is invited to donate blood in week 11, could thus visit the blood bank in week 11, 12 and 13. So, the dependent variable was the number of donors visiting the blood bank within 3 weeks, after receiving an invitation card.

Statistical analyses

A logistic regression model was built to measure the effects of conditions on return behaviour versus non-return behaviour (reference group). The strengths of the relationships were expressed as odds ratios (ORs) with corresponding 95% confidence intervals (CIs). Logistic regression analyses were performed to test whether 'donation site' or 'excluding donors who did not fill out the whole information sheet ($n = 20$)' or 'receiving a questionnaire' were confounders. Results adjusted for donation site or excluding donors who did not fill out the whole information sheet did not differ from the original analyses. Furthermore, results showed that receiving a questionnaire was a confounder, but did not interact significantly with condition. Therefore the analyses were adjusted for having received a questionnaire (yes/no), and also for age and sex by adding these variables into the models. Due to non-linearity, age was categorized into three equal groups: 18–21 years old, 22–29 years old, and 30 years or older.

For the variables in the questionnaire, means and their accompanying standard deviations were calculated for each condition. ANOVA tests were performed to analyse the data. Statistical significance was reached when $P < 0.05$.

Results

Table 1 shows the demographic characteristics of the donors in each condition. In general, newly registered donors were between 24 and 26 years old, and were more

Table 1 Demographic characteristics and return rates of donors in each condition

Condition	Age (years), Median (25th–75th)	Sex (Male), N (%)	Total return rate, N (%)
(1) Control, <i>n</i> = 176	24 (20–35)	52 (29.5)	93 (52.8)
(2) IS, <i>n</i> = 197	24 (20–33)	51 (25.9)	120 (60.9)
(3) IS+II, <i>n</i> = 180	25 (21–38)	53 (29.4)	98 (54.4)
(4) IS+EC, <i>n</i> = 188	26 (21–35)	67 (35.6)	108 (57.4)
(5) IS+II+EC, <i>n</i> = 196	25 (20–34)	53 (27.0)	126 (64.3)

IS, information sheet; II, implementation intentions, EC, explicit commitment.

often female. There were no differences between the conditions in age, and there were also no significant differences in sex ($P > 0.05$).

The effect of conditions on return behaviour

Table 2 shows the results of the logistic regression analyses on return behaviour, comparing each condition to the control condition. There was an overall positive trend of receiving an IS on return rate, but only condition 5 (IS+II+EC) significantly increased the odds on return behaviour (OR = 1.65, 95% CI = 1.08–2.50). Table 1 shows that condition 5 (IS+II+EC) increased return behaviour of newly registered donors with 11.5% compared with the control condition (condition 1).

Furthermore, additional logistic regression analyses were performed to test significant differences between the intervention conditions (condition 2 to 5). Results showed that there were no significant differences between the intervention conditions in first-time return behaviour of newly registered donors.²

The effect of conditions on variables in the questionnaire

Because condition 5 (IS+II+EC) was the only condition that influenced return behaviour, it was investigated

²Different conditions were combined to further explore the effect of II and EC on return behaviour. In the first analysis condition 2 (IS) + 3 (IS+II) were taken together as reference group, and condition 4 (IS+EC) + 5 (IS+II+EC) were taken together to test the effect of EC on return behaviour, controlled for II. The effect of EC was not significant: OR = 1.15, 95% CI = 0.86–1.54. In the second analysis condition 2 (IS) + 4 (IS+EC) were taken together as reference group, and condition 3 (IS+II) + condition 5 (IS+II+EC) were taken together to test the effect of II on return behaviour, controlled for EC. The effect of II was also not significant: OR = 1.00, 95% CI = 0.74–1.33).

Table 2 Logistic regression analyses on return behaviour for different conditions

Condition	OR (95% CI)*
(1) Control, <i>n</i> = 176	(reference)
(2) IS, <i>n</i> = 197	1.44 (0.95–2.18)
(3) IS + II, <i>n</i> = 180	1.09 (0.72–1.67)
(4) IS + EC, <i>n</i> = 188	1.26 (0.83–1.92)
(5) IS + II + EC, <i>n</i> = 196	1.65 (1.08–2.50)

IS, information sheet; II, implementation intentions, EC, explicit commitment.

*All analyses were adjusted for age, sex and questionnaire.

whether these donors scored differently on questionnaire variables than donors in the control condition. Table 3 shows that donors in condition 5 (IS+II+EC) scored significantly higher on intention and significantly lower on planning failure ($P < 0.05$). There was no significant difference between condition 1 and condition 5 on feeling pressure to donate blood. Furthermore, results showed no significant differences when other conditions were compared with the control condition for the variables intention, planning failure and pressure to donate ($P > 0.05$). Only condition 3 (IS+EC) differed significantly from the control condition on pressure to donate (respectively $M = 4.54$, $SD = 1.57$; $M = 5.06$, $SD = 1.55$; $P < 0.05$).

Discussion

The present study showed that the IS+II+EC condition was the only one successful in significantly increasing first-time return behaviour of newly registered donors, compared with the control condition. The other conditions did also increase first-time return behaviour of donors in comparison with the control group, but these effects did not reach significance. Donors in the IS+II+EC condition had an 11.5% higher return rate than donors in the control condition. Furthermore, this study showed that the mind set of donors was changed after filling out an information sheet with both intervention techniques.

Table 3 Mean (SD) for Intention, planning failure and pressure to donate for donors in condition 1 (control) and condition 5 (IS+II+EC)

Variables	Condition 1: Control <i>n</i> = 71	Condition 5: IS+II+EC <i>n</i> = 84
Intention*	5.54 (1.04)	5.90 (0.93)
Planning failure*	3.04 (1.06)	2.68 (1.03)
Pressure to donate	5.06 (1.55)	4.90 (1.39)

*Significant different mean values ($P < 0.05$) between condition 1 and condition 5.

Results showed that donors in the IS+II+EC condition had a significant higher intention to donate blood, and had fewer difficulties with planning a donation in their daily lives, compared with donors in the control condition.

Taken together, our results demonstrate the effectiveness of an information sheet with different techniques in bridging the gap between good intentions and desired behaviour. Although previous research often showed the usefulness of implementation intentions within a variety of health behaviours [12], our results demonstrate that implementation intentions alone were not successful in increasing donor return behaviour. An explanation why the implementation intention condition in our study did not work on itself might be the general formulation of the 'if-then' plan in the information sheet. In the Netherlands, donors have a 2-week walk-in period to donate blood. Donors could therefore give multiple answer options on which day they prefer to donate blood. Gollwitzer and Sheeran [12] pointed out that if-then plans may not be very effective when opportunities and responses are not specified precisely. When people are still able to deliberate about when, where and how to perform a behaviour, they have no benefit from the enhanced activation of situational cues and responses that are automatically elicited. On the other hand, this reasoning is in contrast with the results of Ajzen, Chasch and Flood (2009): general or specific implementation intentions were both even effective in performing the intended behaviour [18]. Our results seem more in line with the reasoning of Gollwitzer and Sheeran [12].

In addition, in our study, creating strong commitment with the intended behaviour was not effective on its own. Gollwitzer [11] pointed out that even if people make goal commitments, the distance between goal setting and goal attainment is often long. People still have to overcome obstacles that prevent them from reaching their goal, and creating commitment on itself does not seem enough to bridge the gap between intention and behaviour. This might also be the case in our study, wherein the barriers that donors need to overcome in order to donate might be stronger than the positive effect of creating commitment with the intended behaviour. Donating blood is an altruistic act wherefore people voluntarily donate blood to save lives of other people. New donors who give blood for the first time can experience feelings of distress or anxiety. Therefore it seems that in our study both techniques were necessary to increase first-time return behaviour. The overall effect of IS+II+EC is quite distinguished compared with the control condition, an increase in return rate of 11.5%.

Although more research is needed to have a better understanding of the added value of both these techniques, there are several interpretations possible to

explain this result. One of the interpretations is the interaction between the techniques: thinking about when to donate blood and creating strong commitment to donating blood. When donors have to do both, it might be that they not only feel committed to the goal behaviour, but also feel more committed to actually perform the behaviour. Thus, it could be that these two techniques enforce each other when implemented both at the same time. An alternative interpretation is that the effect is due simply to the amount of effort donors had to put into the intervention study. In the IS+II+EC condition donors had to fill in both tasks, instead of only filling in implementation intentions or signing an information sheet. Thus, it can be that the effect of IS+II+EC condition is merely due to the summing of these tasks, rather than the content of the tasks. This effect can be explained in terms of sunk cost: the more effort, time or money someone has been invested, the more likely it is that this person will continue to perform a particular behaviour [23]. Another theory that might explain the combination effect is the effort justification paradigm resulting from the cognitive dissonance theory [24]. This paradigm states that people who had to put more effort in achieving a task, they will evaluate this task more positively. This positive evaluation might lead to increased willingness to perform further actions, like donating blood in this particular study. Please note that care should be taken not to overinterpret the difference between the experimental conditions, as statistically they did not differ from each other.

When looking at the results of the questionnaire, donors in the IS+II+EC condition scored lower on planning failure and had a higher intention to donate blood, compared with donors in the control condition. This study was conducted to overcome the barriers 'planning failure' and 'time constraints'. Thus, it seems that the donors IS+II+EC condition were more able to plan a donation in their daily life and were more motivated to donate blood for the first time. Furthermore, it is worthwhile to mention that, in general, newly registered donors in this study scored somewhat lower on intention. A possible explanation is that in our study all newly registered donors had to fill in the questionnaire. In many other studies questionnaires are sent by (postal) mail. Donors who are more complied with donating blood, are more likely to respond to the questionnaire. Therefore the motivation scores in these studies can be higher than scores in our study wherein all donors had to fill in the questionnaire.

Although in the blood donor literature, it is frequently suggested to use interventions to improve return behaviour within specific donor groups [25], this is one of the first studies that tested different techniques to increase return behaviour of first-time donors. The strength of this study is the objective measurement of 'return behaviour'

with data extracted from the donor database and the usability of the interventions for daily practices. All intervention conditions are easy to implement in the blood bank procedure and has relatively low costs. Aside from the strengths, this study has some limitations. We must be careful with generalizing the results to other countries. In the Netherlands, as well as in 12% of the blood establishments in Europe, donors first have their medical examination before they are allowed to donate blood (DOMAINE project; <http://www.domaine-europe.eu>). In other countries, blood donors are allowed to donate blood at their first appointment. Further research needs to be done to investigate whether these techniques will be effective in other countries as well.

In conclusion, this is one of the first studies that successfully used different intervention techniques to increase first-time return behaviour. Results showed that an information sheet about the blood bank procedure with both implementation intentions and explicit commitment increased actual return behaviour of blood donors with 11.5%, compared with the control condition. In

addition, donors who filled out and signed the information sheet had a higher intention to donate blood and had less planning failure than the control condition. These results are promising in reducing non-return behaviour of first-time donors and future research will be needed to shed more light on the functioning of different intervention techniques.

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Conflict of interest

The authors declare no conflict of interests.

References

- Schreiber GB, Sanchez AM, Glynn SA, *et al.*: Increasing blood availability by changing donation patterns. *Transfusion* 2003; 43:591–597
- van Dongen A, Abraham C, Ruiter RAC, *et al.*: Does questionnaire distribution promote blood donation? An investigation of question-behavior effects. *Ann Behav Med* 2013; 45:163–172
- Wevers A, Wigboldus D, van Baaren R, *et al.*: Characteristics of donors who do or do not return to give blood and barriers to their return. *Blood Transfus* 2014; 12:37–43
- Sojka BN, Sojka P: The blood donation experience: self-reported motives and obstacles for donating blood. *Vox Sang* 2008; 94:56–63
- Marantidou O, Loukopoulou L, Zervou E, *et al.*: Factors that motivate and hinder blood donation in Greece. *Transfus Med* 2007; 17:443–450
- van Dongen A, Ruiter RA, Abraham C, *et al.*: Predicting blood donation maintenance: the importance of planning future donations. *Transfusion* 2014; 54:821–827
- Knowles ES, Linn JA: *Resistance and Persuasion*. Mahwah, NJ, Erlbaum, 2004.
- Veldhuizen I, Ferguson E, De Kort W, *et al.*: Exploring the dynamics of the theory of planned behavior in the context of blood donation: does donation experience make a difference? *Transfusion* 2011; 51:2425–2437
- Ferguson E: Predictors of future behaviour: a review of the psychological literature on blood donation. *Br J Health Psychol* 1996; 1:287–308
- Masser BM, White KM, Hyde MK, *et al.*: The psychology of blood donation: current research and future directions. *Transfus Med Rev* 2008; 22:215–233
- Gollwitzer PM: Implementation intentions: strong effects of simple plans. *Am Psychol* 1999; 54:493–503
- Gollwitzer PM, Sheeran P: Implementation intentions and goal achievement: a meta-analysis of effects and processes. *Adv Exp Soc Psychol* 2006; 38:249–268
- Godin G, Sheeran P, Conner M, *et al.*: Which survey questions change behavior? Randomized controlled trial of mere measurement interventions. *Health Psychol* 2010; 29:636–644
- Godin G, Amireault S, Vézina-Im L, *et al.*: Implementation intentions intervention among temporarily deferred novice blood donors. *Transfusion* 2013; 53:1653–1660
- Cialdini RB: *Influence*. New York, Pearson Education, 2001
- Lipsitz A, Kallmeyer K, Ferguson M, *et al.*: Counting on blood donors: increasing the impact of reminder calls. *J Appl Soc Psychol* 1989; 19:1057–1067
- Ferrari JR, Barone RC, Jason LA, *et al.*: The effects of a personal phone call prompt on blood donor commitment. *J Community Psychol* 1985; 13:295–298
- Ajzen I, Czasch C, Flood MG: From intentions to behavior: implementation intention, commitment, and conscientiousness. *J Appl Soc Psychol* 2009; 39:1356–1372
- De Kort W, Veldhuizen I: Donor base; in: De Kort W, Veldhuizen I (eds): *Donor Management Manual*. The Netherlands, DOMAINE Project, Nijmegen, 2010:55–82
- Charng H, Piliavin JA, Callero PL: Role identity and reasoned action in the prediction of repeated behavior. *Soc Psychol Q* 1988; 51:303–317
- Conner M, Godin G: Temporal stability of behavioural intention as a moderator of intention-health behaviour rela-

- tionships. *Psychol Health* 2007; 22:875–897
- 22 Wevers A, Wigboldus D, van Baaren R, *et al.*: Return behavior of occasional and multigallon blood donors: the role of theory of planned behavior, self-identity, and organizational variables. *Transfusion* 2014; 54:805–813
- 23 Arkes HR, Blumer C: The psychology of sunk cost. *Organ Behav Hum Decis Process* 1985; 35:124–140
- 24 Aronson E, Mills J: The effect of severity of initiation on liking for a group. *J Abnorm Soc Psychol* 1959; 59:177–181
- 25 Ferguson E, France CR, Abraham C, *et al.*: Improving blood donor recruitment and retention: integrating theoretical advances from social and behavioral science research agendas. *Transfusion* 2007; 47:1999–2010