ISBT Science Series
An affiliated publication to Vox Sanguinis

ISBT Science Series (2015) 10 (Suppl. 1), 268–274

ORIGINAL PAPER 4B-PL4-01

Plasmapheresis: recruitment, retention and flexible donors

B. Masser[1,2] & K. Bagot[3]

[1]School of Psychology, The University of Queensland, St Lucia, Qld, Australia
[2]Research & Development, Australian Red Cross Blood Service, Brisbane, Queensland, Australia
[3]Public Health, The Florey Institute of Neuroscience and Mental Health, Heidelberg, VIC, Australia

With worldwide demand for plasma-derived products increasing, a critical question is how to effectively recruit and retain voluntary non-remunerated (VNR) plasmapheresis donors? This review summarizes an emerging empirical literature and translates this into practical strategies for Blood Collection Agency (BCAs). We extend this to consider how 'flexible' donors – donors who move between panels as required to donate the right product at the right time – may be best cultivated by BCAs.

Key words: applied research, flexible donor, plasma, plasmapheresis, recruitment, retention

Introduction

Worldwide, there is a shift in demand for blood and blood products [1], with demand generally falling for whole blood (WB) while increasing for plasma-derived products [2]. Although the reasons underlying this are complex, improved efficiencies in the use of WB/red blood cells [3] and the increased use of therapeutic plasma-derived products [4] coupled with demographic changes [5] are implicated. For countries committed to self-sufficiency through voluntary non-remunerated (VNR) donation, this shift poses a challenge that the current empirical literature does not fully address. Specifically, how do you effectively recruit and retain VNR plasmapheresis donors?

How can we recruit to plasmapheresis?

In many countries [6, 7], recruitment to plasmapheresis occurs through WB donation, although not all WB donors are eligible or preferred for plasmapheresis. For those donors eligible and preferred for plasmapheresis, how can conversion be encouraged? In some instances, common motives [8] may mean that recruitment is as simple as creating an awareness of plasmapheresis [9]. For other donors, however, the decision to convert may be more complex and may stem from differences between the donation procedures. Specifically, plasmapheresis requires the donor to be present at the site for approximately twice as long as WB donation [10], is desired to be engaged in more frequently than WB donation and is a process that recirculates donor's red blood cells, with anticoagulant and (in some countries) saline compensation [11].

The majority of research exploring the determinants of VNR donors' conversion to plasmapheresis has been published in the last 4 years (for an exception see [12] and for remunerated recruitment see [13–15]). Targeting recruitment, Bagot *et al.* [6] conducted focus groups with 30 Australian WB donors who had declined a request to convert to plasmapheresis. Consistent with the empirical literature on WB donation [16] and on regular remunerated [15] and VNR [9] apheresis donors, the time taken for donation was the most frequently cited barrier to conversion. The expectation of donation frequency, being uncomfortable with the idea of blood replacement, being unclear about the donation process, difficulty scheduling appointments and fear of contamination of returned fluid were also salient deterrents for these WB donors. A subsequent quantitative analysis of critical beliefs underpinning 624 WB donors' intentions to convert to plasmapheresis also identified time and fluid return as significant negative predictors of the intention to convert [17].

The Theory of Planned Behaviour (TPB; [18]) in quantitative analyses has explored VNR donor conversion to plasmapheresis [7, 19, 20]. Within the TPB, intention is the proximal determinant of behaviour. In turn, intention to engage in the behaviour is determined by attitude (positive or negative cognitive or affective evaluations), subjective norm (perceived social pressure) and perceived

Correspondence: Barbara Masser, School of Psychology, The University of Queensland, St Lucia, Qld 4072, Australia.
E-mail: b.masser@psy.uq.edu.au

behavioural control (perceived ease or difficulty) and/or self-efficacy (perceived confidence). Despite considerable methodological differences between the Veldhuizen and van Dongen [7] and Godin and Germain [20] TPB analyses, they reveal consistent predictors of intention: specifically, positive attitudes towards, and perceived confidence in, or capability of, performing the behaviour. Further, intention consistently predicted donation behaviour.

Similar to Godin and Germain [20], Bagot et al. [19] used an extended TPB framework to predict Australian donors' plasmapheresis conversion. Participants were *recent* donors who had been asked to convert while donating WB or *distant* donors who had not donated in the last 3–12 months, contacted by the National Call Centre and asked to convert to plasmapheresis. Participants completed standard TPB construct measures plus moral norms (sense of obligation to make a first plasmapheresis donation) [8, 9, 16], anticipated regret at not converting [9] and donor role identity [21, 22]. Subsequent first lifetime plasmapheresis donation behaviour was tracked for eligible donors ($N = 693$). Although moral norm scores were higher in the recent than distant group, structural equation modelling showed that the predictive paths did not differ between the groups. Intention predicted plasmapheresis conversion, accounting for 45·2% of variance in behaviour in the recent sample and 35·1% in the distant sample. Self-efficacy and moral norm were positively associated, and donor role identity negatively associated with intention. Bagot et al. [19] argue that the negative relationship between role identity and intention reflects a mismatch between a role identity formed on the basis of prior WB donations and the plasmapheresis behaviour requested [22, 23]. The predictors accounted for 55·3% of variance in intention in the recent sample, and 53·4% variance in the distant sample.

While these analyses [7, 19, 20] suggest that targeting self-efficacy, attitudes, and moral norms is key to successful plasmapheresis conversion, Bagot *et al.* [24] provides insight into how conversion conversations may be most effectively achieved operationally. For donors asked to convert to plasmapheresis, either in person at a centre or over the phone by the National Call Centre, *who* made the conversion approach [donor or Blood Collection Agency (BCA) staff], *how many* approaches were made and the *orientation* of the conversion conversation were assessed. Two orientations were considered: whether the approach was made with a conversion (e.g. focusing on persuasion of the donor, applying pressure to meet BCA operational needs) or donor (e.g. focusing on donor needs and providing information, answering questions) emphasis. Donors' intentions to convert to plasmapheresis, subsequent plasmapheresis behaviour and the number of WB donations in the past 5 years were also recorded. Although a higher proportion (18%) of donors converted through face-to-face attempts than phone approaches (8% conversion), intention was positively associated with conversion in both samples. Further, the number of donor approaches to the BCA and a donor-oriented approach by the BCA were positively associated with intention, while WB donor history was negatively associated with intention to convert. The number of approaches by the BCA was negatively associated for in-centre sample only and a conversion orientation was weakly, positively associated with intention in the call centre sample, where such a selling approach may be expected.

Although not extensive, the empirical research suggests practical strategies for resource efficient and successful plasmapheresis conversion; outlined in Table 1.

Retention in the plasmapheresis panel

After successful recruitment, the challenge is then retention. Extrapolating from the WB literature, adverse events during plasmapheresis are likely to deter retention [27, 28]. However, given the potential frequency of plasmapheresis donation, habit [29] and a role identity [30] may be more quickly established.

To date, limited research has considered VNR plasmapheresis retention. Negative aspects of plasmapheresis donation have been considered in focus group analyses. Bagot *et al.* [6] explored perceptions of plasmapheresis with donors who had completed a single lifetime plasmapheresis donation before returning to the WB panel ($n = 27$) or lapsing from donating entirely ($n = 27$). Bove *et al.* [9] sampled 103 experienced plasmapheresis donors who had made, on average, approximately 10 plasmapheresis donations in the last 12 months. Interestingly, both the novice [6] and experienced donors [9] identified common deterrents to plasmapheresis: the time required to donate, 'excessive' questioning and paperwork, the expected frequency of donation and negative physical experiences (e.g. general impact on the body, cold flushes).

Novice donors, however, identified additional deterrents to continuing plasmapheresis including eligibility requirements [6]. Those who lapsed entirely noted structural, salience and physical problems factors, commonly reported by non-donors [31]. Those who lapsed to WB perceived 'disorganization' from unexpected delays and noted concerns about contaminated fluid as contributing factors. The negative impact of fluid return for recruitment [17] and retention [6] of plasmapheresis donors was also observed in a critical beliefs analysis with 460 first-time plasmapheresis donors (Bagot KL, Masser BM, White KM, et al., in submission). In this analysis, the idea of red blood cells being returned was significantly negatively associated with intention to donate

Table 1 Strategies to optimize VRN plasmapheresis recruitment

Strategy	Examples of operational application
Create awareness of plasmapheresis among suitable donors early in their career [9]	Colocate plasmapheresis and whole blood (WB) donation in same area Include plasmapheresis in information and images presented to donors (e.g. in welcome packs)
Encourage targeted donors to initiate conversations about plasmapheresis early in their career [24]	Provide marketing collateral in-centre to facilitate donor approaches Face-to-face interactions with a donor-centric focus [24] Target self-efficacious and positive donors [7, 19, 20]
Reassure donors as to safety of plasmapheresis [6, 18]	The role of fluid return in contributing to donor safety should be detailed [12]
Acknowledge the length of the process but contextualize it	Reference the diversity of products that plasma is used in and volume of plasma gained vis-à-vis WB donation
Build self-efficacy for plasmapheresis [7, 19, 20]	Highlight the similarities between their successful WB donations and the plasmapheresis process (e.g. same size needle) Provide new plasmapheresis donors with an experienced phlebotomist and coping strategies for adverse elements (e.g. return of fluid) such as distraction [25]
Limit the number of conversion attempts [24] and requests for increased donation frequency [6]	Use donor management systems to identify eligible donors and track Blood Collection Agency requests Repetition of requests to those who have declined does not aid conversion [24] Target donor agreement to a single plasmapheresis donation or to a frequency equal to their WB donation schedule. Having first agreed to this small request, donors may later agree to a more intensive donation schedule ('foot in the door' t echnique [26])

plasma again. Intention was positively associated with behaviour.

For those retained, however, the benefits of being a plasmapheresis donor outweigh the sacrifices [9]. Experienced plasmapheresis donors [9] identify an increased opportunity to interact with collection staff and other donors ('they're almost like friends because you go in so often', p. 2414), an increased ability to schedule their appointments and establish a routine, the donation being less physically taxing and a sense of eliteness in providing something 'more useful' than WB ('we're part of a very small, elite group of people', p. 2414) as salient benefits. In the critical beliefs analysis (Bagot KL, Masser BM, White KM, et al., in submission) with first-time plasmapheresis donors, the beliefs that plasmapheresis would result in the donor feeling good and would result in more flexibility in donation schedules were positively associated with intention to engage in plasmapheresis again for experienced WB (≥3 donations) donors who had converted to plasmapheresis.

These analyses (Bagot KL, Masser BM, White KM, et al., in submission) [6, 9] provide insight into the factors taken into consideration by donors when deciding to remain within the plasmapheresis panel and suggest practical strategies for retention that are outlined in Table 2. However, within these, there are seemingly paradoxical findings that highlight the need for more empirical research on VNR plasmapheresis retention. For example, how can a plasmapheresis donor be encouraged to establish a routine [9] without making salient the potential frequency of donation [6, 9])?

Some identified retention strategies, particularly those that capitalize on social connections [9, 33] are resource intensive for BCAs. An alternative strategy may be to capitalize on the 'eliteness' [9] associated with plasmapheresis. People are inherently motivated to move from low- to high-status groups when they are able and when the group identity is important to them [36, 37]. While this may decrease loyalty among those who cannot, or who are not desired to, move up to plasmapheresis [36], positioning plasmapheresis as higher status than WB donation may be a successful and cost-effective means of conversion and retention to the plasmapheresis panel. Although plasmapheresis panel management is critical, a broader issue may need to be considered.

Is retention (only) to plasmapheresis the desired outcome?

As noted by the National Blood Authority Australia [38], the 'availability of blood and blood products in the right quantities, at the right time and in the right place is dependent on a complex supply chain' (p. 10). Unfortunately, this supply chain is vulnerable and VNR supply can fall below demand [39]. For example, in Australia, WB seasonal shortages [1] can occur in winter

Table 2 Strategies to optimize VRN plasmapheresis retention

Strategy	Examples of operational application
Contextualize the required questioning	Provide information to tell the donor why questions are being asked (e.g. for lifestyle questions, refer to the safety of the donor and the potential recipient) Consider whether for regular plasmapheresis donors, the questioning can be revised to only ask questions relevant since their last donation
Manage the service environment to minimize perceptions of service inefficiencies [6]	Provide information as to why apparent inefficiencies are occurring (e.g. for empty donation, chairs refer to donor cancellations)
Manage expectations so donors have a realistic idea of time requirements [6, 9]	Communicate the maximum time commitment but encourage engagement in distracting enjoyable activities. A quicker donation process will benefit the Blood Collection Agency (BCA) from the resulting positive affect [32] Early donor career conversions minimize the difference in donation duration between the initial whole blood donation (with more detailed paperwork and examination) and the initial plasmapheresis donation (where a lower volume may be taken)
Provide social and education support [34]	Provide additional support to reduce specific fears (e.g., around fluid return, Bagot KL, Masser BM, White KM, et al., in submission) and bolster pride in donating [35]
Structure staffing/the presence of volunteers to ensure that donors who routinely donate on a particular day encounter the same BCA team	Publicizing regular staffing would facilitate the development of interpersonal relationships between donors and members of 'their' BCA team, encouraging donors to develop a routine [9], aiding retention [9, 33]
Limit requests for increased frequency of donation	Repeated requests are 'a bit of an insult' ([9], p. 2417) and are demotivating [33]. Empower donors to donate consistently within their motivation and time/perceived physical constraints

when donors are unable to donate due to colds and flu. Low WB inventory poses a conundrum: should new donors be recruited, or should donors converted to plasmapheresis be encouraged to return (temporarily) to WB? Given the reduced cost [40] and safety benefits of experienced donors, reversion of plasmapheresis donors would seem optimal. However, will these donors be flexible?

Social psychological research suggests that it may be difficult to move plasmapheresis donors back to WB if recruitment and retention strategies have capitalized on the perceived eliteness of plasmapheresis donors [9, 37]. An inadvertent outcome of operational requirements such as the need to successfully complete a WB donation prior to plasmapheresis and structural factors, such as plasmapheresis donors being separated from WB donors, may result in plasmapheresis donors seeing themselves as different and better than WB donors [9]. More directly, and consistent with successful marketing practices [41], plasmapheresis programs may be marketed to suggest plasmapheresis as a superior donation. Donors may be encouraged to 'step up' to plasma and marketing collateral developed capitalizing on the 'golden' colour of plasma and its value. While this creative, innovative emphasis may be successful in plasmapheresis conversion, it may inadvertently result in donors being unwilling to make WB donations if required. That is, having 'stepped up' to plasma, these donors will likely be unwilling to 'step down' to WB [36]. Further, any strategies perceived by the donor as 'forcing' them to return to WB will be problematic as perceived status demotions in customer loyalty programs lead to negative affect and withdrawal behaviours [42]. For conversion and retention programs that capitalize on the higher status of plasmapheresis over WB, this may build a barrier to flexibility.

Building donor flexibility

With demand for, and supply of, WB and plasma varying in both the short- and long-term, having donors who respond flexibly and immediately to supply needs across different blood products would be a significant inventory management tool. An initial exploration of this has been undertaken in the context of a VNR plasma recruitment program that emphasizes status gains through plasmapheresis. Bove et al. [43] conducted 60 semistructured telephone interviews with donors varying in their experience of WB and/or plasmapheresis donation. Participants were asked about their willingness to move between making WB and plasma donations. An explicit emphasis on operational need was key to persuading plasmapheresis donors to move back to WB: 49% of the sample indicated that knowing there was an inventory demand would facilitate them changing donation types. They were, however, concerned about the impact on their donation schedule and their donor rewards (linked to number of donations). Further, their flexibility was limited with only

50% being willing to consider only donating WB in the future: 'I suppose I'd feel like lesser than the people who are giving plasma'. These donors ultimately wanted to remain in the higher status plasmapheresis group.

For BCAs that wish to encourage donation flexibility, the critical question is how this is best achieved? Although this has not been considered in the donation context, research on group processes [38, 39] coupled with plasmapheresis recruitment and retention research [6, 7, 9, 17, 19, 20, 31, 42] allows some suggestions.

As a form of volunteering, recruitment to blood donation is unique [44]. Although BCAs may ultimately require their donors to engage in different types of donation, typically new donors are only presented with, and aware of, one type of donation; that is, WB. In many countries, the reason for this is clear: recruitment to blood product donation occurs through WB [6, 7] and not all WB donors can, or are desired to, be blood product donors. In this context, the primary task of BCAs is to recruit WB donors and this is reflected in linguistic (e.g., blood donation, blood donor) and colour (i.e. red) emphases. For a new donor, however, their emerging donor identity [21] is located within their specific donation behaviour; that is, a WB donor role identity. Other donation behaviours, such as plasmapheresis, may be seen as qualitatively different and as inconsistent with their WB donor role identity [19, 33]. In the absence of status differentials, this serves to limit movement between donation types.

A critical first step to donor flexibility, therefore, is to ensure that WB and blood product donation are not presented as disconnected behaviours. Operationally (e.g. co-locating plasmapheresis and WB machines) and in marketing communications, all donation types should be presented as being congruent with, and contributing equally to, an overarching (i.e. superordinate) donor identity. Marketing donation to comprise WB and/or blood product donation will provide operational advantages. Aside from creating awareness [9] and prompting donors to start conversations about plasmapheresis [24], promoting WB and plasmapheresis as simply variants of donor behaviour eliminates barriers to moving between donation types. As such, engaging in any donation behaviour strengthens donor role identity and retention is enhanced. For existing donors, who may have developed behaviour-specific identities that negatively impact on flexibility, a range of strategies may help. Asking them to imagine [45] or exposing them [46, 47] to a donor who donates multiple products, emphasizing the common factors that motivate both types of donation [48] and providing superordinate goals (e.g. the demand for all products [49]) should strengthen their superordinate donor identity and begin to break down barriers to flexibility.

Equality across the different donation types should be emphasized. As noted, stepping up to plasma requires stepping down to WB and will not universally occur Bove et al. [43]. Further, recruitment and retention efforts predicated on the superior status of plasmapheresis will result in those not preferred for, or able to engage in, plasmapheresis feeling rejected [9, 32]. Like deferred donors [50], these donors may subsequently lapse at a greater rate. In systems that emphasize status differences, the messaging subtext [51] for those donors rejected from plasmapheresis is that they cannot give the 'best' product. In the context of fluctuating supply and demand, this is a misnomer; at the point where WB is demanded and supply is inadequate, then a WB donor is giving 'life's best gift' [51].

In emphasizing equality between donations, donors could, as an initial step to conversion and potential flexibility, be encouraged to ask to be assessed for 'their best (for donor, for BCA) donation'. This would communicate the BCA's concern for the donor, consistent with a donor-orientated approach [24]. While the first face-to-face interview could introduce different donations and being assessed for their best donation type/s, the second could focus on the donor's potential for donating different products (e.g., based on blood type, vein suitability) [8, 9, 19]. After assessment, the interview emphasis should be on providing the donor with the appropriate information for their potential donations, bolstering their self-efficacy [25] and answering questions. In addition, donors suitable for plasmapheresis (either as a flexible or plasmapheresis donor) could be encouraged to immediately book a plasmapheresis appointment, further facilitating conversion [52]. In addition to using the optimal recruitment and retention strategies outlined, these donors' experiences (e.g. adverse events) should be recorded and future communication tailored to their designated unique donation type (WB or plasma) or their flexibility. Donor reward systems may be reoriented to reward providing the 'best' product, not merely the most frequent. For example, such a reward system could simultaneously incorporate recognition of the donor's capability in conjunction with the BCA's inventory needs, rather than reflecting a simple donation count. While each donation would warrant reward, additional points could be allocated to those who donate the optimal product given both their and the BCA's needs as well as to those who behave flexibly (i.e., change their donation type based on the BCA's request) on their appointment day. Such a sophisticated reward system would also address the inequalities inherent in using a system where some donors (e.g. O neg, those with small veins) are not able to provide the more frequent, and thus rewarded, donation types (i.e. plasma/plateletpheresis).

Conclusions

In the context of an increase in demand for plasma-derived products, we addressed the critical question of 'how do you effectively recruit and retain VNR plasmapheresis donors?'. Evidence-based strategies for BCAs to implement are available from an emerging empirical literature. For recruitment, these centre on creating awareness, encouraging conversion conversations early in the donor career but limiting conversion attempts, contextualizing barriers, reassuring donors and building self-efficacy in donors. Many of these strategies need to be redeployed for effective retention. Further, retention can be enhanced through providing social and informational support and structuring the donation process to encourage interpersonal relationships. While leveraging the higher status of plasmapheresis may provide an easy and cost-efficient recruitment and retention strategy for BCAs, it may be a risky strategy. We suggest an alternative recruitment model through which donor flexibility, the provision of the right product at the right time by the right donor, may be maximized. By presenting WB and blood product donation as equally valued donation behaviours, the value of all donors is emphasized and all donation behaviour becomes congruent with an overarching donor identity. Implementing evidence-based recruitment and retention strategies in the context of donors' 'best' donations will allow the BCAs to both build their plasmapheresis panels and identify their flexible donors. With the elimination of identity linked to a specific donation type, this opens up the possibility that in the event of a product shortage, these flexible donors can be targeted to boost the relevant inventory. Potentially this will allow responsiveness in supply that may be hard to achieve using current methods.

Acknowledgements

This research was supported under the Australian Research Council's Linkage Projects funding scheme (grant number LP100100408; Industry Partner: The Australian Red Cross Blood Service). We acknowledge Australian governments, which fully fund the Australian Red Cross Blood Service for the provision of blood products and services to the Australian community. Both authors contributed to the relevant research reported within this paper, the drafting and critical revision of the paper and approved the final submitted version of this manuscript.

References

1 Caulfield J: Blood supply management: experience and recommendations from Australia. *ISBT Sci Ser* 2013; **8**:41–45

2 National Blood Authority Australia: *Annual Report 2012–2013*. National Blood Authority Australia, Canberra, Australia 2013

3 Devine DV, Sher GD, Reesink HW, *et al.*: Inventory management. *Vox Sang* 2010; **98**:e295–e363

4 Robert P: Global plasma demand in 2015. *Pharm Policy Law* 2009; **11**:359–367

5 Borkent-Raven BA, Janssen MP, Van Der Poel CL: Demographic changes and predicting blood supply and demand in the Netherlands. *Transfusion* 2010; **50**:2455–2460

6 Bagot KL, Bove LL, Masser BM, *et al.*: Perceived deterrents to being a plasmapheresis donor in a voluntary, nonremunerated environment. *Transfusion* 2013; **53**:1108–1119

7 Veldhuizen I, van Dongen A: Motivational differences between WB and plasma donors already exist before their first donation experience. *Transfusion* 2013; **53**:1678–1686

8 Bednall TC, Bove LL: Donating blood: a meta-analytic review of self-reported motivators and deterrents. *Transfus Med Rev* 2011; **25**:317–334

9 Bove LL, Bednall T, Masser B: Understanding the plasmapheresis donor in a voluntary, nonremunerated environment. *Transfusion* 2011; **51**:2411–2424

10 Flood P, Wills P, Lawler SP, *et al.*: *Review of Australia's Plasma Fractionation Arrangements*. Canberra, ACT, Australia, Department of Health and Ageing, 2006

11 Buzza M, Marks DC, Capper H, *et al.*: A prospective trial assessing the safety and efficacy of collecting up to 840 mL of plasma in conjunction with saline infusion during plasmapheresis. *Transfusion* 2012; **52**:1806–1813

12 Schneider T, Fontaine O, Huart JJ: Ethics, motivations of plasmapheresis donors. *Transfus Clin Biol* 2004; **11**:146–152

13 Ringwald J, Lange N, Rabe C, *et al.*: Why do some apheresis donors donate blood just once? *Vox Sang* 2007; **93**:354–362

14 Trimmel M, Lattacher H, Janda M: Voluntary whole-blood donors, and compensated platelet donors and plasma donors: motivation to donate, altruism and aggression. *Transfus Apher Sci* 2005; **33**:147–155

15 Rodell MB, Lee ML: Determination of reasons for cessation of participation in serial plasmapheresis programs. *Transfusion* 1999; **39**:900–903

16 Schreiber GB, Schlumpf KS, Glynn SA, *et al.*: Convenience, the bane of our existence, and other barriers to donating. *Transfusion* 2006; **46**:545–553

17 Masser B, Bagot KL, White KM, *et al.*: Critical differences in key beliefs for WB donors making their first plasmapheresis donation. Presented at the European Conference on Donor Health and Management, The Hague, the Netherlands, 3–5 September 2014

18 Azjen I: The theory of planned behavior. *Organ Behav Hum Decis Process* 1991; **50**:179–211

19 Bagot, K.L., Masser, B.M., & White, K.M. 2015. Using an extended Theory of Planned Behavior to predict a change in the type of blood product donated. *Annals of Behavioral Medicine, Early View*, DOI: 10.1007/s12160-014-9677-9.

20 Godin G, Germain M: Predicting first lifetime plasma donation among WB donors. *Transfusion* 2013; **53**:157S–161S

21 Masser BM, Bednall TC, White KM, *et al.*: Predicting the retention of first-time donors using an extended theory of planned behavior. *Transfusion* 2010; **52**:1303–1310
22 Piliavin JA, Callero PL: *Giving Blood: The Development of an Altruistic Identity*. Baltimore, Johns Hopkins University Press, 1991
23 Turner RH: The role and the person. *Am J Sociol* 1978; **84**:1–23
24 Bagot KL, Bove LL, Masser BM, *et al.*: Asking for something different from our donors: factors influencing persuasion success. *Transfusion* 2014; **54**:848–855
25 France CR, France JL, Kowalsky JM, *et al.*: Education in donation coping strategies encourages individuals to give blood: further evaluation of a donor recruitment brochure. *Transfusion* 2010; **50**:85–91
26 Freedman JL, Fraser SC: Compliance without pressure: the foot-in-the-door technique. *J Pers Soc Psychol* 1996; **4**:195–202
27 Amrein K, Valentin A, Lanzer G, *et al.*: Adverse events and safety issues in blood donation – a comprehensive review. *Blood Rev* 2012; **26**:33–42
28 Masser BM, White KM, Terry DJ: Beliefs underlying the intention to donate again among first-time blood donors who experience a mild adverse event. *Transfus Apher Sci* 2013; **49**:278–284
29 Ouellette JA, Wood W: Habit and intention in everyday life: the multiple processes by which past behavior predicts future behavior. *Psychol Bull* 1998; **124**:54–74
30 Callero PL: Role-identity salience. *Soc Psychol Q* 1985; **48**:203–215
31 Duboz P, Cuneo B: How barriers to blood donation differ between lapsed donors and non-donors in France. *Transfus Med* 2010; **20**:227–236
32 Kahneman D, Tversky A: Prospect Theory: an analysis of decision under risk. *Econometrica* 1979; **47**:263
33 Grube JA, Piliavin JA: Role identity, organizational experiences, and volunteer performance. *Pers Soc Psychol Bull* 2000; **26**:1108–1119
34 Hanson SA, France CR: Predonation water ingestion attenuates negative reactions to blood donation. *Transfusion* 2004; **44**:924–928
35 Williams L, DeSteno D: Pride and perseverance: the motivational role of pride. *J Pers Soc Psychol* 2008; **94**:1007–1017
36 Spears R: Group Identities: The Social Identity Perspective. in SJ Schwartz, K Luyckx, VL Vignoles (Eds): *Handbook of Identity Theory and Research*. London, Springer, 2011:201–224
37 Tajfel H, Turner JC: An integrative theory of intergroup conflict; in Austin WG, Worchel S (eds): *The Social Psychology of Intergroup Relations*. Monterey, CA, Brooks/Cole, 1979: 33–47
38 National Blood Authority Australia: National Blood Research and Development Strategy. Retrieved from http://www.nba.gov.au/researchdevelopment/research-development.html, 14 August 2012
39 Slonim R, Wang C, Garbarino E: The market for blood. *J Econ Perspect* 2014; **28**:177–196
40 Australian Red Cross Blood Service. *Marketing Costs per Donor*. National Office, Melbourne, Vic., Australian Red Cross Blood Service, 2011
41 McCall M, Voorhees C: The drivers of loyalty program success: an organizing framework and research agenda [Electronic version]. *Cornel Hosp Q* 2010; **51**:35–52
42 Wagner T, Hennig-Thurau T, Rudolph T: Does customer demotion jeopardize loyalty?. *J Mark* 2009; **73**:69–85
43 Bove, L.L.,, Bagot, K.L.,, Masser, B.M. & White, K.M. (2014). Resisting a status downgrade: The role of messaging in impeding donor flexibility. *Presented at American Marketing Association Servsig 2014 International Service Research Conference* (13-15 June, 2014), Thessaloniki, Greece.
44 Lee L, Piliavin JA, Call VRA: Giving time, money and blood: similarities and differences. *Soc Psychol Q* 1999; **62**:276–290
45 Miles E, Crisp RJ, Miles E: A meta-analytic test of the imagined contact hypothesis. *Group Process Intergroup Relat* 2014; **17**:3–26
46 Pettigrew TF, Tropp LR: A meta-analytic test of intergroup contact theory. *J Pers Soc Psychol* 2006; **90**:751–783
47 Crisp RJ, Turner RN: Can imagined interactions produce positive perceptions? Reducing prejudice through simulated social contact. *Am Psychol* 2009; **64**:231–240
48 Sacchi S, Rusconi P, Russo S, *et al.*: New knowledge for old credences: asymmetric information search about in-group and out-group members. *Br J Soc Psychol* 2012; **51**:606–625
49 Gaertner SL, Dovidio JF, Banker BS, *et al.*: Reducing intergroup conflict: from superordinate goals to decategorization, recategorization, and mutual differentiation. *Group Dyn Theory Res Pract* 2000; **4**:98–114
50 Hillgrove T, Moore V, Doherty K, *et al.*: The impact of temporary deferral due to low hemoglobin: future return, time to return, and frequency of subsequent donation. *Transfusion* 2000; **51**:539–547
51 Healy K: *Last Best Gifts: Altruism and the Market for Human Blood and Organs*. Chicago, The University of Chicago Press, 2006
52 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