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Psychological ownership and identity motives in blood donation

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Abstract

Background and Objectives: Interventions to retain existing donors are essential to increase the blood supply. Blood donor self-identity is proposed to motivate sustained donation behaviour. However, interventions to develop self-identity in the absence of donating blood are scarce. We propose that experiencing psychological ownership of a blood collection agency (BCA) may provide a potential avenue for fostering donor self-identity and subsequent sustained donation behaviour.

Materials and Methods: Two hundred and fifty-five donor participants were recruited through Prolific Academic ($n = 175$) and an Australian online blood donor community group ($n = 80$), with an additional 252 non-donors recruited through Prolific Academic. Participants completed an online survey assessing donation behaviour, perceived psychological ownership of a BCA, self-identity and intentions to donate blood, amongst other constructs.

Results: Consistent with our theoretical argument, psychological ownership was positively associated with self-identity, which, in turn, was positively associated with intentions to donate blood. Donation behaviour was positively associated with psychological ownership. Examination of psychological ownership by donation experience showed the expected relationship with committed donors having the strongest psychological ownership and non-donors having the weakest psychological ownership over a BCA.

Conclusion: We provide initial support for the inclusion of psychological ownership within a model of sustained blood donation behaviour.

Keywords

donor motivation, donor retention, identity, psychological ownership

Highlights

- Perceived psychological ownership of a blood collection agency (BCA) is associated with donor self-identity that is associated with intention to donate.
- Reported psychological ownership of a BCA increased with donation experience.
- Psychological ownership is a potential mechanism to promote sustained donation behaviour.

INTRODUCTION

The demand-supply gap for blood and blood products is set to widen, with ageing populations [1] and a decline in young [2, 3] and first-time blood donors [4]. Internationally, only 26.5%–65.3% of first-time blood donors return within 2 years [5], with donors at risk of lapse at any stage of their donor career. Therefore, increasing donor retention through interventions focused on sustaining blood donation behaviour is one method to increase the blood supply.

For regular donors, past donation behaviour is the best predictor of future blood donation behaviour [6]. Even for novice donors, the first 12 months of a donor career are crucial, with donors who make multiple donations being significantly more likely to continue to donate regularly compared to those who donate once [7]. Within an *identity theory* account of donation behaviour, first-time and novice blood donors are primarily motivated by external factors such as social pressure [8, 9]. However, as novice donors continue to donate, they develop a role identity (a self-concept based on a performed role) from their increasing familiarity with blood donation. With repeated donations, this donor role identity is validated, and thus, a self-identity (a self-defining role identity) is constructed around being a blood donor [9, 10]. Self-identity thus mediates the relationship between past and future donation behaviour.

While identifying as a blood donor has been found to be positively associated with a range of constructs [11], self-identifying as a blood donor is proposed as key in transitioning from a novice to a committed blood donor [12, 13]. Consistent with this, Wevers et al. [14] found self-identity was positively associated with donor return but only for donors who had already made 10+ donations. Older studies also reveal a direct relationship between blood donor self-identity and stronger intentions to donate [12, 15]. For example, Charng et al. [15] found cross-sectional evidence that while attitudes primarily predicted intentions in first-time donors, for second-time donors, self-identity as a blood donor predicted donation intentions over and above attitudes, with intention considered a robust predictor of behaviour [16, 17].

Identity theory thus provides a parsimonious explanation for donor retention: through donating multiple times, a donor begins to view themselves as a *blood donor*, and this donor self-identity encourages future donations. However, an identity theory explanation does not account for a donor's experience with their blood collection agency (BCA). This is important as organizational variables such as perceived prestige of a BCA and donor satisfaction have both been shown to enhance identity salience [18, 19]. Further, interventions to develop self-identity and improve retention are scarce. In a single study, Collier and Callero [20] showed that high school students' role identity as a recycler was strengthened through college students modelling recycling behaviour in 18 sessions over 6 weeks. However, the intensity of this intervention limits its transferability to blood donation, where resources and contact time with donors are restricted. As such, there remains a need to develop novel methods of fostering blood donors' self-identity to strengthen intentions and sustain blood donation behaviour.

We propose that increasing a donors' subjective sense of psychological ownership over a BCA may provide a potential novel avenue to strengthen donor identity. The concept of psychological ownership stems from the organizational literature and is defined as the sense of ownership experienced over material and immaterial possessions [21]. The core of psychological ownership is the sense of being psychologically connected to a possession [22], such that this possession becomes an extension of the self [23]. Psychological ownership and identity are thus theoretically associated as ownership (*what is mine*) may serve as a means of developing self-identity (*who I am*) [21, 24–26]. Critically, psychological ownership is meaningfully associated with pro-organizational behaviour [27]. In the first study to examine psychological ownership in a non-profit context, Ainsworth [28] showed that previous volunteering behaviour was positively associated with participants' sense of psychological ownership of the non-profit organization, which, in turn, was positively associated with future intentions to volunteer for the organization.

While donor identity has been shown to be associated with a range of constructs [11, 15], the potential of psychological ownership to influence blood donor identity and subsequent donation behaviour has not been explored. Psychological ownership is already theoretically linked to several variables that have been previously studied in a blood donation context. For example, trust in an organization is a theoretical prerequisite of donation behaviour [29, 30], as well as a potential precursor of psychological ownership [31]. Critically, malleable antecedents to psychological ownership have been identified [21]. Noting the absence of effective interventions directly targeting blood donor identity, or constructs associated with donor identity, interventions targeting the antecedents of psychological ownership may provide an effective way to strengthen identity and improve donor retention.

Current study

Research shows that identifying as a blood donor is associated with sustained donation behaviour [12, 15]. Perceived psychological ownership is theoretically associated with identity [24–26] and predicts future intentions to volunteer [28]. Further, psychological ownership is malleable through its antecedents. Therefore, increasing donors perceived psychological ownership of a BCA is a potential pathway for developing a donor self-identity that does not exclusively rely on past behaviour. Those who donate repeatedly should report high levels of psychological ownership of their BCA along with stronger self-identity and intentions to donate than infrequent donors.

In this study, we provide an initial test of the role of perceived psychological ownership of a BCA on donor retention. Extending Ainsworth [28], we propose incorporating psychological ownership into an identity theory account of blood donation behaviour. Specifically, we expect that higher prior engagement in blood donation will be positively associated with psychological ownership towards a BCA, which subsequently will be positively associated with self-identity as a blood donor, which, in turn, will be positively associated with future

intentions to donate blood. While this study cannot assess if psychological ownership causes donor identity, or vice versa, this pattern of results would provide initial support for the importance of psychological ownership within an identity model of donation behaviour. In addition to providing an initial test of this model, we also assess the relationship between psychological ownership and blood donation behaviour through recruiting non-, lapsed, current and committed donors.

MATERIALS AND METHODS

Materials and methods for this cross-sectional survey were preregistered on the Open Science Framework prior to data collection (https://osf.io/42mgn and https://osf.io/pqbxt).

An a priori power analysis was conducted using a Monte Carlo simulation [32] for indirect effects for a serial mediation model with two mediators. Based on previously observed correlations ([28]; unpublished data set) and conservative effect-size estimates, for a significance set at 0.05, to achieve 0.8 power, 262 participants were required.

Initially, we planned to only recruit current blood donors. In Australia (where the study was conducted), donors can give whole blood every 12 weeks and plasma and platelets every 2 weeks. Consistent with past research [6, 33], current donors were defined as those who had donated blood (whole blood, plasma or platelets) at least once in the past 2 years.

After conducting this initial analysis, we chose to further explore the relationship between past behaviour and psychological ownership by recruiting an additional comparable non-donor sample (Amended Open Science Framework preregistration: https://osf.io/jbwd3). Noting our study was only initially powered for a serial mediation and not the subsequent analyses conducted to include non-donors, we conducted a post hoc power analysis that estimated an approaching 1.0 power.

All participants were Australian residents, aged 18+, who believed themselves eligible to donate blood. Participants were recruited through an online participant recruitment platform for researchers (Prolific Academic [Prolific]) and an Australian online blood donor community page (unaffiliated with Australian Red Cross Lifeblood [Lifeblood]). On the community page, donors share their experiences, motivations and achievements surrounding blood donation. Permission was given by the page administrators to distribute survey materials. Participants recruited through Prolific were compensated at an average rate of £6.00/h. Participants from the community page could enter a prize draw to win one of four $50 gift cards. Figure 1 illustrates how recruited samples were categorized dependent on research objectives.

Donor participants

Three hundred and seven donors were recruited through Prolific ($n = 200$) and the online community group ($n = 107$). Forty-eight participants (27 from the community page and 21 from Prolific) were excluded because they stopped completing the survey and/or withdrew consent. From Prolific, a further three participants were excluded for failing an attention check (i.e., 'It is important that you

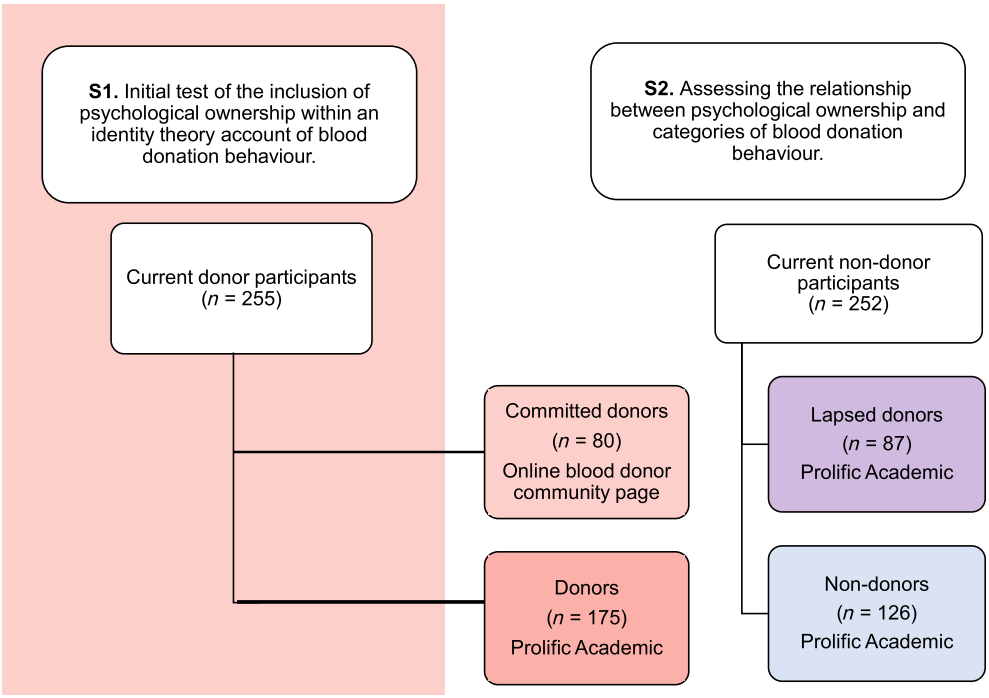

FIGURE 1 Participant sampling and recruitment strategy based on research objectives.

pay attention to this study, please select *strongly agree*') and one participant was excluded for providing duplicate responses. Our final sample thus comprised 255 donors recruited through Prolific ($n = 175$) and the community group ($n = 80$). Blood donor community participants had a mean age of 44.14 (SD = 15.07) with 37.5% men and 62.5% women. Prolific participants had a mean age of 32.25 (SD = 10.05) with 40.6% men, 57.7% women and 1.7% non-binary, genderfluid or transgender.

Non-donor participants

An additional 252 current non-donors were recruited through Prolific. Of these, 8 withdrew consent, 27 did not meet eligibility requirements (i.e., had recently donated blood and perceived themselves ineligible to donate) and 4 failed an attention check. Our final current non-donor sample comprised 87 donors who had not attended a BCA in the past 2 years (lapsed donors) and 126 participants who had never attended a blood collection site before (non-donors). Lapsed donors had made an average of 6.10 (SD = 7.02) donations, with 72.41% having donated whole blood and 5.75% having donated plasma. They had a mean age of 38.95 (SD = 12.07) with 36.8% men, 62.1% women and 1.1% preferring not to disclose their gender. Non-donors had a mean age of 33.91 (SD = 14.05) with 38.9% men, 57.1% women and 4% non-binary, genderfluid or transgender.

Procedure

This study was approved by the University of Queensland Human Research Ethics Subcommittee (approval number 2021/HE002020) and ratified by Lifeblood (2021#12). After providing consent, participants indicated their age and gender. Following this, participants answered questions about their eligibility to donate and how many times overall they had presented to donate with options of <2, 2–10, 11–29, 21–50, >50. Donors were also asked to provide the number of donations they had made in the last 2 years. Donation behaviour was operationalized as the total number of self-reported whole-blood, plasma or platelet donations made in the past 2 years. Participants' experience of psychological ownership over a BCA (e.g., 'Lifeblood is my organisation') [27] and blood donor self-identity (e.g., 'Blood donation is important to me') [8, 12] were assessed using adapted versions of established measures. Participants then answered four questions assessing future intentions to donate blood (e.g., 'I would like to donate blood in the future'). All responses were made on a 7-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). Finally, participants were asked to complete measures of other constructs not central to our model: social identity (solidarity, satisfaction, centrality and self-definition), psychological involvement, organizational trust, prestige and attitude towards a BCA.

Statistical analyses

Analyses were conducted using IBM SPSS Statistics for Windows, Version 28. Serial mediation was conducted using model 6 of PROCESS Macro for SPSS [34] with indirect effects being statistically significant if the 95% confidence interval (CI) does not include zero [35].

RESULTS

Psychological ownership and identity in donor participants

Bivariate correlations between outcome variables for donor participants were calculated (Table 1). As expected, past donation behaviour, psychological ownership, self-identity and intention were all significantly positively correlated. Analysis of the associations between psychological ownership and other measured constructs revealed that psychological ownership was distinct from other variables typically associated with donor identity (e.g., trust, satisfaction, attitude and prestige; all *rs* ≤ 0.33; see Table S3).

An initial serial mediation was conducted for current donors ($n = 255$) to assess our theoretical model. The number of donations in the past 2 years was entered as the predictor, psychological ownership and then identity as serial mediators and intention to donate blood as the outcome. Consistent with hypotheses, the indirect pathway between past behaviour and intention via both psychological ownership and self-identity was significant ($\beta = 0.07$, SE = 0.02, CI 0.04, 0.11). Further, the indirect effect of behaviour on intention via only self-identity was significant ($\beta = 0.26$, SE = 0.03, CI 0.19, 0.32). Finally, the indirect effect of past donation behaviour on intention via psychological ownership alone was significant but negative ($\beta = -0.05$, SE = 0.02, CI −0.09, −0.02). After accounting for all mediators, there was no direct association between past donation behaviour and future donation intentions (see Figure 2).

TABLE 1 Means, standard deviations (SD) and correlations between number of blood donations made in the past 2 years (past donations), psychological ownership (PO), self-identity and intention to donate blood in the future (intention) for current donors.

Variable	*M* (SD)	PO	Self-identity	Intention
Past donations	10.67 (14.10)	0.35**	0.50**	0.26**
PO	3.96 (1.37)	–	0.45**	0.15*
Self-identity	5.74 (1.28)		–	0.58**
Intention	6.58 (0.77)			–

Note: Psychological ownership, self-identity and intention were measured on 7-point scales; higher scores indicating greater amounts of the construct.
*$p < 0.05$; **$p < 0.01$.

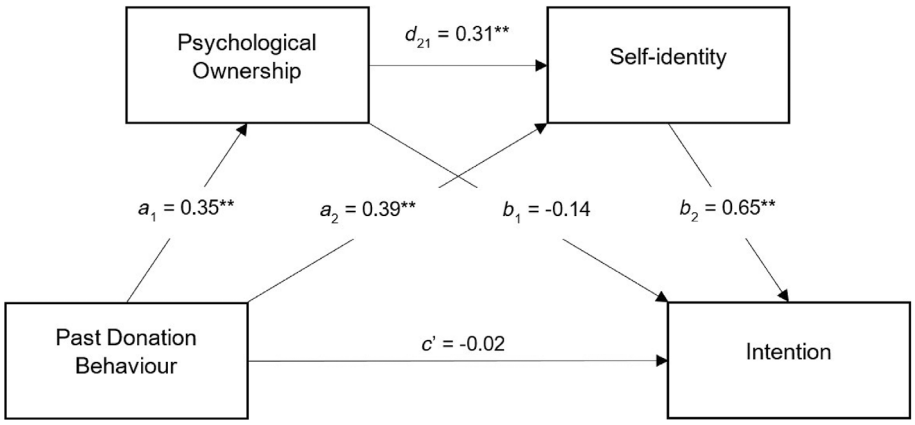

FIGURE 2 Model summary for serial mediation of donation behaviour (past 2 years) acting on intention via both psychological ownership and self-identity in a current donor sample. Standardized logistic regression coefficients are displayed. *p < 0.05; **p < 0.01.

TABLE 2 Means and standard deviations (SD) on outcome measures by donor status.

Variable	Non-donors $N = 126$	Lapsed donors $N = 87$	Donors $N = 175$	Committed donors $N = 80$
Past donations	–	–	3.38 (3.89)	27.04 (15.00)
PO	2.96 (1.36)	3.00 (1.23)	3.57 (1.94)	4.80 (1.36)
Self-identity	3.26 (1.49)	3.96 (1.08)	5.30 (1.20)	6.70 (0.82)
Intention	4.52 (1.81)	5.44 (1.43)	6.49 (0.81)	6.78 (0.65)

Note: Donations made in the past 2 years (past donations); psychological ownership (PO), self-identity and intention on a 7-point scale; higher scores indicate greater amounts of the construct.

Psychological ownership and past behaviour in donor and non-donor participants

To compare current donor participants to lapsed and non-donors on psychological ownership, self-identity and intention, current donor participants were separated into two groups based on source. Participants recruited through the blood donor community group were labelled *committed donors*, while donors recruited through Prolific were labelled *donors*. This distinction reflected both the high mean number of donations (see Table 2) made by the committed donor group in the past 2 years, as well as the high engagement seen from these donors in actively choosing to join a blood donor group. Further, on this community page, donors post about their blood donation experience and receive positive feedback about their donation behaviour. This validation leads us to propose that *committed donors* should be highly identified [36] and thus more committed to donation than other active blood donors. For donor participants, 90.28% had donated whole blood and 35.43% had donated plasma. For committed donors, 91.25% had donated whole blood and 90.00% had donated plasma.

A multivariate analysis of variance was conducted with donor status (committed donor, donor, non-donor and lapsed donor) as the predictor and psychological ownership, self-identity and intention as dependent variables (see Figure 3). The results revealed a significant multivariate effect of blood donors status, Wilks' Lambda (Λ) = 0.44, $F(9, 1124.53) = 49.96$, $p < 0.01$.

Univariate follow-up analyses showed psychological ownership, $F(3, 464) = 39.76$, $p < 0.001$, $\eta^2 = 0.20$, self-identity $F(3, 464) = 155.78$, $p < 0.001$, $\eta^2 = 0.50$ and intention to donate $F(3, 464) = 9.51$, $p < 0.001$, $\eta^2 = 0.34$ differed by donor status. Subsequent Bonferroni corrected linear contrasts demonstrated that all comparisons between the donor status groups for all constructs were significant ($p < 0.001$), with the exception of psychological ownership for non-donors ($M = 2.96$, SD = 1.36) and lapsed donors ($M = 3.00$, SD = 1.23; $p = 1.000$), and intention for donors ($M = 6.49$, SD = 0.81) and committed donors ($M = 6.78$, SD = 0.65; $p = 0.521$). Consistent with our theoretical argument, psychological ownership as well as self-identity and intention differed by donor category. Specifically, non-donors experienced the least psychological ownership followed by lapsed donors, donors and then committed donors. These key findings replicated when donor participants were grouped based on past donation behaviour (<10 total donations performed, >10 total donations performed; see Data S1).

DISCUSSION

This study provides the first examination of the role of psychological ownership over a BCA in blood donor retention. Specifically, we

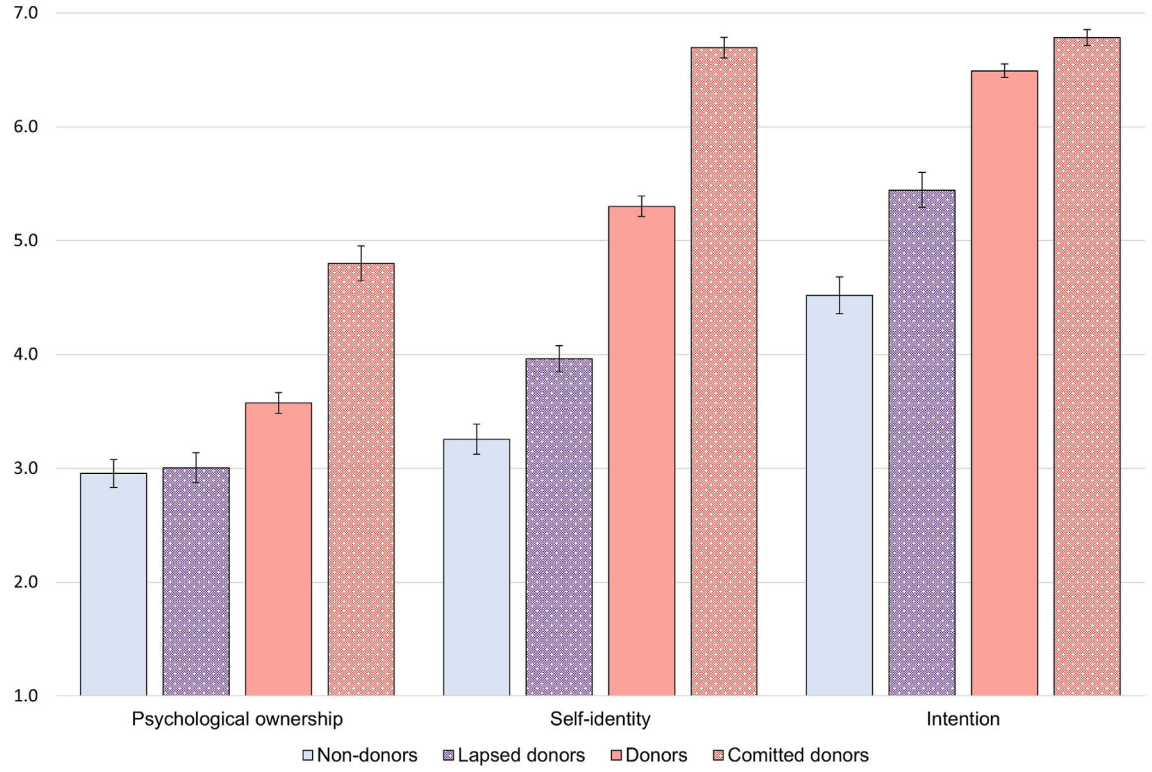

FIGURE 3 Mean psychological ownership, self-identity and intention to donate blood, as a function of donor group. Error bars display standard error.

explored the relationship between previous donation behaviour and donation intentions, turning to psychological ownership and self-identity to explain the association. Our initial analysis conducted with donors showed that past blood donation behaviour was positively associated with the extent to which people felt psychological ownership over their BCA. In turn, this psychological ownership was associated with feeling more like a blood donor (self-identity), which was positively associated with intentions to perform identity consistent behaviour (blood donation). These findings are consistent with our proposed model and provide preliminary evidence for the role of psychological ownership in predicting sustained donation behaviour.

We also observed a significant pathway from past behaviour to intention through self-identity alone. This is consistent with an identity theory account of donation in which donors develop self-identity through repeat behaviour that motivates future donations. This shows that while psychological ownership is a potential way to develop a donor self-identity, it is not the only mechanism through which identity can be influenced. Thus, future research should investigate how other variables associated with identity (e.g., satisfaction and trust; see Table S3) integrate into this theoretical model. Finally, past behaviour also influenced intention through only psychological ownership. Unexpectedly, although repeat donation positively influenced psychological ownership, the relationship of psychological ownership to intention was negative. This small but significant association likely represents a suppressor effect as the zero-order correlation between psychological ownership and intention was positive. However, it may potentially reflect a burden experienced by donors who perceive high levels of psychological ownership over a BCA, which should be explored in future research.

Through incorporating a non-donor sample, we provided further evidence for psychological ownership as an important factor in blood donation behaviour. Specifically, the amount of psychological ownership participants reported over their BCA increased with donation experience such that non-donors and lapsed donors reported significantly less psychological ownership compared to both current and committed donors. This same pattern was also observed for donor self-identity and intention to donate. Although psychological ownership increased with past donation behaviour, our design means that we cannot determine if donation behaviour causes increased psychological ownership (or vice versa). Future research should clarify this relationship before moving to develop interventions to increase donors' psychological ownership to encourage sustained donation behaviour.

Collectively, the findings of this study are consistent with our theoretical argument that increasing perceived psychological ownership of a BCA may increase donor self-identity and thus improve donor retention. Psychological ownership is thus one potential mechanism to influence donor retention; however, it still requires further theoretical development. As well as advancing our theoretical understanding of sustained blood donor behaviour, this found support for psychological ownership of a BCA may also have potential implications for BCAs when seeking to retain donors. Theoretically, future interventions

may enhance ownership of a BCA through manipulating the three proposed antecedents of psychological ownership: controlling a possession, coming to intimately know a possession and investing oneself into a possession [21, 37, 38]. As such, BCAs could trial and evaluate the impact of simple interventions shown to promote repeat behaviour in other public good contexts on donor retention. For example, based on the results of Peck et al. [38], simply changing language in donor communications to refer to 'their' BCA rather than 'the' BCA or presenting donors with additional choices when donating should improve donor retention (through increased perceived control). Research should, thus, explore whether manipulating the antecedents of psychological ownership can increase sustained blood donation behaviour.

In this study, we provided initial support for incorporating psychological ownership within a model of blood donation behaviour. However, our findings are limited by both a reliance on self-reported donation history and only assessing total number of donations in the past 2 years (with only categories representing career totals captured). While a focus on donation behaviour in the past 2 years may allow for more accurate behaviour recall, this approach required we create distinct categories of donation behaviour (i.e., *committed donors* and *donors*) to compare to our current non-donor sample. To better model the relationship between past donation behaviour and ownership, research should consider incorporating a continuous and objective measure of past donation behaviour.

A final limitation is our use of intention as a proxy for blood donation behaviour. Although intention is a commonly used indicator of behaviour, it often over-estimates the likelihood of performing the behaviour [39, 40]. In this study, both donors and committed donors reported similarly strong intentions to donate which may indicate a ceiling effect in measurement. While it is not surprising to see active blood donors reporting stronger intentions to donate [11], current measures of intention may not effectively differentiate between degrees of high donor engagement. Future research should, thus, explore alternative outcome measures to approximate retention behaviour.

A further point of interest is the differing ability of whole-blood and plasma donors to engage with a BCA. Identity theory proposes that donating fosters self-identity which in turn strengthens future intentions to donate. Given the higher frequency with which one can donate plasma compared to whole blood, plasma donors may be more strongly identified than whole-blood donors. Although we did not measure frequency of type of donation (i.e., whole blood, plasma), it is likely that many committed donors were current plasma donors, while most participants in the donor category were current whole-blood donors. Despite plasma donors having more opportunities to engage with blood donation and thus being more likely to develop a donor self-identity, there is still a demand for whole blood which must be met.

The results of this study support the inclusion of psychological ownership within a model of sustained blood donation behaviour. Interventions based on psychological ownership of a BCA have the potential to foster donor self-identity and unlock the key to blood donor retention. Psychological ownership-based interventions should now be tested with the end goal of ensuring a stable donor panel and sufficient blood supply.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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