

A typology of strategies that recognize, reward, and incentivize blood donation

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CONFLICT OF INTEREST: The authors have no conflicts of interest to declare.

Word Count: 3582

Number of Figures: 2

Number of Tables: 2

Number of References: 51

ABSTRACT

Background: Blood collection agencies (BCAs) worldwide are continuously looking to improve recognition, reward, and incentive (RRI) policies to optimize the recruitment and retention of blood donors. However, given the inconsistent categorization and variety of strategies available, there is a need for a theoretically informed and empirically supported framework to guide RRI research and policy development.

Study Design and Methods: Survey data from 1028 voluntary nonremunerated whole blood and plasma donors in Australia was used to validate a theorized RRI typology based on distinctions between the level of congruency with the act of donating blood (congruent vs incongruent), visibility of acknowledgement (public vs private), benefits provided (self vs other), and likely reinforcement schedule (fixed vs variable).

Results: A six-factor solution met all statistical criteria and was most consistent with a priori theoretical underpinnings. The factors were labelled (i) deal promotion, (ii) loyalty program, (iii) BCA token, (iv) health check, (v) charity donation and (vi) travel compensation.

Discussion: This typology provides researchers with a standardized theoretical and conceptual framework to organize and synthesize findings from the existing literature and help BCAs develop RRI policies that are likely to be successful. We present a future research agenda across and within the RRI strategies.

Key words: Reward, incentives, typology, blood donation

INTRODUCTION

Blood collection agencies (BCAs) worldwide use a wide variety of strategies to recognize, reward, and incentivize donors to enhance the effectiveness of recruitment and retention campaigns and to encourage higher frequency donation.¹ The breadth of what is offered is bound by the World Health Organization's Expert Consensus Statement and European Blood Alliance who both advocate voluntary non-remunerated blood donation with donor compensation in line with altruistic encouragement^{2, 3}; thus precluding the use of cash. A recent international forum on the topic called for further investigation to improve donor recognition, reward, and incentive (RRI) policies globally as blood donation rates remain below 4% in most countries⁴, with many countries reporting a decline in donations during the recent pandemic.⁵

Recognizing blood donor contributions, from a simple 'thank you' to gifts, is an important strategy for BCAs to show donors they are valued.^{6, 7} In the transfusion literature, the terms 'incentive' and 'reward' are often used interchangeably to describe items provided in recognition of a blood donation.^{8, 9} However, a distinction has been made between an incentive, which is offered before donating to motivate action, and a reward, which is offered as a surprise after donating to reinforce warm glow.¹⁰ Incentives and rewards can vary by their level of uncertainty, with uncertain rewards (e.g., a prize draw) perceived as more in line with altruistic motivation.¹¹ The Nuffield Council on Bioethics' Intervention Ladder further illustrates the distinct characteristics of recognition, which expresses gratitude (Rung 2), compared to rewards, which provide extra encouragement to those already disposed to donate for altruistic reasons (Rung 4), and incentives that can both remove barriers (Rung 3) and provide benefits to encourage those who may not otherwise have contemplated donating (Rung 5).¹²

In addition to issues relating to RRI terminology, the categorization of strategies considered to recognize, reward, and incentivize donors has been used inconsistently and without empirical support. Some authors group strategies within the broad categories of monetary or non-monetary¹³⁻¹⁵, or include equivocal categories such as ‘miscellaneous’ or ‘other’.^{16, 17} AABB classified incentives into four broad categories: miscellaneous, compensation-payment, gifts, and tokens of appreciation¹⁸, yet the extent to which strategies encouraged or discouraged donors varied within each category.¹⁹ This suggests the categories may be too broad. In systematic reviews of transfusion literature, Bagot et al. (2016)²⁰ grouped incentives into five categories (physical, psychological, logistical, tangible and reciprocity), while Chell et al. (2018)¹⁰ identified 12 (six monetary and six non-monetary).

Given this inconsistent categorization and variation, there is a need for a theoretically informed and empirically supported framework to: (1) better understand the types of RRI strategies available, (2) provide a structure for researchers to contribute to a standardized evidence-base that improves the synthesis of insights, and (3) strategically guide BCAs’ use of RRI strategies. There are several distinctions made in the literature that inform the categorization of RRIs. These are based on characteristics of the strategy (congruent vs incongruent, public vs private), who benefits (self vs other) and the reinforcement schedule (fixed vs variable).

Congruent vs Incongruent

Reward fit relates to whether a strategy links closely (or not) to the core offering of a business or service.²¹ For BCA’s, strategies that directly facilitate efforts to donate blood are considered to have a close fit (congruent) with their core business. Health checks benefit donors by allowing them to monitor their health and potentially increase their ability to continue donating, while travel compensation and time off work facilitate blood donation by

removing key barriers such as travel costs and inconvenience.^{22, 23} Other strategies, such as gifts or vouchers, are incongruent but indirectly facilitate blood donation (pro-social business) by motivating people to donate. RRIs with a close fit have been found more effective for high involvement services such as blood donation.²⁴ Further, Chmielewski et al. (2012)¹⁸ proposed that strategies congruent with donating blood (close fit) are more valued by donors than incongruent strategies because the former are perceived to reinforce rather than manipulate a person's actions.²⁵ Van Dyke et al. (2020)²⁶ found some support for this claim, with health checks and travel compensation among the strategies rated by donors and non-donors as most likely to encourage others to donate blood.

Public vs Private

Recognition of blood donor contributions and the provision of RRI strategies can be both private and public. In comparison to strategies provided privately to donors (e.g., health checks), public forms of RRI strategies display the identity and generosity of blood donors to others. For example, presenting donors with a pin or plaque²⁷ or a branded gift such as a t-shirt, pen or water bottle, publicly identifies the individual as a blood donor. The broader loyalty literature also distinguishes between rewards that provide a tangible/financial benefit (hard) or social (reputational)/emotional benefit (soft), where the former impacts satisfaction and the latter predicts loyalty.^{21, 28} While donors may respond differently to each RRI, this may be particularly evident when comparing strategies provided publicly or privately, as a public reward for prosocial actions can undermine intrinsic motivation.²⁹ Some blood donors prefer to be discrete and not discuss their donations openly, while others want to donate conspicuously and have visible tokens to signal their donor status as well as promote the cause.^{30, 31}

Self-Regarding vs Other-Regarding

A common distinction within the donation literature is between egoistic (self-regarding) and altruistic (other-regarding) motivation; the former highlights the donor as the main beneficiary, while the latter highlights the recipient as the main beneficiary.³² The relative success of egoistic versus altruistic appeals on donation behavior depends on whether donors respond in a public or private setting³³, and whether donors' ability to control their emotions, thoughts, impulses, and desires (i.e., self-regulatory resources) are high or low.³⁴ In contrast to strategies that benefit the donor, charity incentives provide broad benefits to others, both through the donation activity itself (i.e., patients who receive the blood donation) and the incentive (addressing broader societal needs through a donation to charity); thus strengthening the prosocial basis of blood donation.³⁵ In this instant, BCAs could either dedicate a dollar amount to internal programs (e.g., donor/ patient programs, research funds) or donate the dollar amount to an external charity (e.g., medical foundation) on behalf of the donor for each blood donation.^{36, 37}

Fixed vs Variable Reinforcement Schedule

Incentives and rewards offer positive reinforcement for donating blood; however, the frequency with which they are distributed (i.e., the reinforcement schedule) can vary. Reinforcement schedules can be fixed (e.g., milestone awards at every n th donation) or variable (e.g., gifts or prize draw).³⁸ Although trials have primarily focused on providing a one-off variable-interval reward to motivate blood donations^{39, 40}, blood donor loyalty programs using a fixed-interval point-system are widely used (e.g., Stanford Blood Center). The variability of how these are deployed (fixed vs variable) adds to the complexity of assessing RRI in the field. For example, while a branded gift is often described as a strategy provided at variable intervals during a donor's career, it could also be provided on a fixed

interval. Therefore, it is important to delineate incentives and rewards by their potential reinforcement schedule, as this may impact donor response.⁴¹

A Conceptualized Typology of RRI Strategies

Together, these distinctions support seven theoretically meaningful yet practically important categories of RRI strategies that transcend the binary distinction between monetary and non-monetary (Figure 1). The conceptual framework uses salient distinctions to illustrate key characteristics that differentiate RRI strategies.

[FIGURE 1 here]

MATERIALS AND METHODS

Participants and Procedure

To validate the theorized typology of RRIs, we used data from the 2017 Non-cash Incentives for Blood Donation in Australia (NIBDA) Study (see Van Dyke et al.²⁶ for a detailed description of the study, as well as participant, non-participant, and population characteristics). This research was conducted within the Australian voluntary non-remunerated (VNR) blood donation context, where Australian Red Cross Lifeblood (previously the Australian Red Cross Blood Service) is responsible for all blood collections (including whole blood, plasma, and platelets) nationally. Consistent with other VNR BCAs, Lifeblood's national donor recognition policy includes milestone badges and donation certificates, as well as intermittent gifts of appreciation.¹ Eligible whole blood and plasma donors (n=9899) were randomly selected from the Lifeblood donor panel and invited to participate in a survey, with 1028 donors completing the survey online (93.2%) and via telephone (6.8%), achieving a minimum response rate of 10.3%. Survey participants were

older than non-participants ($t [1225.594] = 9.402, p < 0.001$) but broadly representative of the Australian blood donor panel.²⁶

Survey Instrument

RRI Strategies

Participants were asked about “*ways to encourage people to donate*” and “*things the Blood Service might offer in the future to try to encourage people to donate.*” In consideration of strategies most likely to be adopted by BCAs, paid time off work and media recognition were excluded from subsequent analyses as neither could be provided to donors in an ongoing capacity. As such, the following 11 RRI strategies were included: (1) branded gifts (“*small Blood Service branded gifts, such as t-shirts, key rings, pens, mugs, etc.*”), (2) tickets (“*concert or movie tickets*”), (3) prize draw (“*tickets to enter a lottery or prize draw*”), (4) health checks (“*health checks, such as for cholesterol or blood pressure*”), (5) milestone award (“*milestone plaques or certificates, to reward number or frequency of donation*”), (6) national loyalty program (“*national rewards program similar to credit card points or a frequent flyer program*”), (7) local reward program (“*local rewards program which would consist of special offers by local businesses*”), (8) travel compensation (“*travel reimbursement such as public transport tickets or petrol vouchers*”), (9) charity donation (“*donations to a charity, 5 to 10 dollars*”), (10) vouchers (“*store vouchers or gift cards 5 to 10 dollars*”), and (11) discounts (“*store discounts or coupons, for example 10% off*”).

Acceptability of RRI Strategies

Donors were asked three questions to indicate how acceptable they found each of the 11 RRI strategies (complete 2017 NIBDA survey available on the Open Science Framework

[<https://osf.io/9w47p/>], or by request to the first author). Acceptability of RRI strategies is

operationalized as the perceived effectiveness and relative impact to the BCA’s reputation.

First, participants were asked to indicate the extent to which each RRI strategy might encourage or discourage someone to donate (i) whole blood and (ii) plasma, in separate questions (1 = strongly discourage to 7 = strongly encourage). Whether donors were asked about whole blood or plasma first was randomized. Next, participants were asked to indicate whether the use of each RRI strategy would make them feel more negative or more positive about Lifeblood (1 = feel much more negative to 7 = feel much more positive). The order in which the 11 RRI strategies were presented to each participant for all three questions was randomized.

Statistical Analyses

There were no significant differences between whole blood and plasma donors for all three questions, nor between RRI items for whole blood and plasma, as such data were combined for analyses.²⁶ To ascertain the latent dimensions represented by the 33 questions (3 questions per RRI strategy), exploratory factor analysis (principal axis factoring) with oblique rotation (Promax) was conducted using SPSS 26. Exploratory factor analysis (EFA) is a statistical technique to identify a smaller set of constructs that are not directly measurable (*latent factors*) that best explain the pattern of correlations in a set of observed (or manifest) variables. The EFA model assumes that the correlation between the observed variables is caused by the existence of the latent variable.⁴² For example, depression cannot be measured directly and so is a latent factor but people can report symptoms of depression (observed variable) and it is the existence of depression that causes the symptoms to be correlated and cluster to form a latent depression factor.

We adopted an exploratory rather than confirmatory approach so as not to constrain the typology too tightly at this first stage of model exploration. The rotated matrix was interpreted to achieve both a simple and theoretically meaningful factor solution. Several

indicators were used to guide the optimal number of factors to extract: parallel analysis based on 100 replications (95% CI); the Scree Test; percentage of variance criterion (a solution that accounts for more than 60% of the total variance was considered satisfactory); and statistical criteria (each factor should have at least three items, an item should load >0.5 and no cross-loading >0.4), thus ensuring a degree of simple structure to the solution.⁴³⁻⁴⁵ Several solutions were considered to identify the best factor structure that was theoretically and empirically supported based on the above criteria.

Internal reliability (Cronbach's alpha) and multi-collinearity were assessed for the final factor solution. Finally, paired-samples t-test were conducted to examine mean differences between factors with Bonferroni alpha adjustments applied ($p < 0.05/15 = 0.003$). As such, only comparisons with p values (all 2-tailed) greater than 0.003 were considered significantly different.

RESULTS

The Kaiser-Meyer-Olkin measure of sampling adequacy was appropriate ($KMO = .833$), and Bartlett's Test of Sphericity indicated the items were sufficiently interrelated ($p < 0.001$) to support a meaningful factor solution.⁴⁶ Parallel analysis identified a 7-factor solution; however, several items cross-loaded or did not reach the minimum recommended factor loading. Factor analysis was re-run twice, reducing the number of factors specified each time, to identify the solution that best met statistical and a priori criteria (Table 1).

[TABLE 1 here]

Across all factor solutions, total variance explained was more than 60%.⁴⁴ However, the 6-factor solution achieved a multi-dimensional solution with minimal cross-loading (cut-off <0.4) that was most consistent with a priori theoretical underpinnings; representing 'deal

promotion', 'loyalty program', 'BCA token', 'health check', 'charity donation', and 'travel compensation' strategy types (Table 2). All six factors demonstrated strong internal reliability (all $\alpha > .70$)⁴⁴ and were all positively associated (Figure 2).

[TABLE 2 here]

The *deal promotions* factor includes strategies that vary by reward certainty and financial value, whereby assured rewards have a low financial value so not to be considered payment (e.g., \$5 store voucher, 10% store discount, movie ticket), while uncertain rewards (e.g., prize draw tickets) may have a higher financial value as there is less chance for donors to win. The *loyalty programs* factor includes special offers by local businesses and earning points for actions that benefit BCAs (e.g., donating blood or recruiting a new donor) that can be redeemed for rewards. The *BCA tokens* factor includes small, branded items of nominal value that acknowledge donor contributions and convey a person's blood donor status (e.g., certificates, badges, t-shirts). The *health check* factor includes strategies that provide donors with the results of health screening (e.g., blood pressure, cholesterol) or tests for infectious diseases (e.g., HIV). The *charity donation* factor includes strategies whereby the BCA makes a financial contribution to charity on behalf of the donor. Finally, the *travel compensation* factor includes strategies of reimbursement or payment of travel costs (e.g., petrol, parking, public transport fares) associated with attending a blood donation appointment.

Overall, all RRI factors were considered acceptable to blood donors with mean scores above 4. Paired samples t-tests between RRI factors showed health checks were considered significantly more acceptable than all other reward types, followed by charity donation, travel compensation and loyalty program RRI strategies (Figure 2). Together the results illustrate differences in acceptability between RRI factors based on theoretical distinctions. For example, private tokens of generosity are, overall, more acceptable than public displays;

strategies congruent with the core business are better received when a benefit is provided rather than barrier removed; and other-regarding and self-regarding are considered similarly acceptable when behavior is rewarded at a fixed interval (e.g., with points for each donation as part of a loyalty program).

[FIGURE 2 here]

DISCUSSION

This paper provides empirical support for a theoretically derived typology of RRI strategies. The typology advances existing classifications^{10, 19, 20} to present six categories (travel compensation, health check, charity donation, loyalty program, BCA token, and deal promotion) that vary theoretically across the following dimensions: congruency with the act of donating blood, public visibility, benefits provided, and likely reinforcement schedule. This typology provides researchers with a standardized framework to organize and synthesize findings from the existing literature and help BCAs develop RRI policies that are likely to be successful. Indeed, we show that private tokens of generosity are more acceptable than public displays. We explore the theoretical and practical implications below.

A Guiding Framework for RRI Research and Policy Development

When researching, updating, and implementing RRI policies, a decisional hierarchy exists comprising three levels: (1) the intervention approach (e.g., incentive), (2) the RRI strategy (e.g., deal promotion), and finally (3) the individual RRI item (e.g., movie ticket). Thus, BCAs must first decide on an intervention approach using the Nuffield Council on Bioethics' Intervention Ladder¹²; particularly whether a strategy is positioned as a reward or incentive as this has implications for donor communications, before selecting one or more RRI

approaches to use as an incentive or reward. The typology presented in this paper provides a guiding framework to maximize effectiveness.

Each RRI strategy is characterized within a multi-dimensional space that describes the active elements that make each strategy effective. For example, deal promotions are self-regarding, private, and incongruent, whereas charity donations are other-regarding, private and incongruent. Researchers/practitioners may choose to compare deal promotions to charity donations as these are both private and incongruent but differ in terms of the beneficiary. Thus, any difference between the two is likely attributable to who benefits, the donor (self-regarding) or another person or organization (other regarding). BCAs may choose to combine multiple RRI strategies with very few or no overlapping dimensions (e.g., travel compensation and BCA tokens) to meet individual donor preferences and maximize effectiveness of their RRI policies. We showed strategies congruent to the core business are better received when a benefit is provided rather than barrier removed.

Thus, the typology can be thought of like a periodic table for RRI, indicating which elements can work in combination or which will have differential effects. While we acknowledge that the typology is not exhaustive (e.g., paid time off work and tax benefits are not included), the theoretical nature of the typology means that new RRIs can be added, much like new elements to the periodic table.¹⁰

In the third step, consideration must be given to the specific item(s) chosen within each RRI strategy; that is, what exactly will be offered to donors. For example, if ‘travel compensation’ is selected as an RRI strategy, BCAs will need to consider the mode of transport (e.g., car vs public transport) and how to compensate for each (e.g., parking ticket, discounted fares). Similarly, for ‘deal promotions’ the discount format (a percent-off vs dollar-off frame),

discount level (20% vs 50%, \$5 vs \$10), and discount source (e.g., national vs local store) can impact promotion successfulness.^{40, 47}

Future Research Agenda

Together, this paper provides a theoretical lens to better understand the underlying multiple and overlapping dimensions that characterize different RRI strategies viewed positively by donors. The typology provides a framework to guide BCAs and researchers to systematically test, compare and advance blood donor RRI strategies globally. However, it is important to validate the typology in additional samples noting there may be cross-cultural factors in how RRI strategies are perceived by donors.⁴⁸ Future research can compare RRI that vary on one dimension or explore if specific combinations of RRI strategies based on non-overlapping or overlapping dimension are most effective, as well as whether the strategy is more effective as an incentive (to motivate action) or reward (to bolster warm glow following action).

Several studies have reported attitudinal differences toward these RRI strategies, for example Van Dyke et al.²⁶ found most RRI strategies to be more acceptable by women, young adults, and novice donors. However, beyond attitudinal data, trials are needed to determine the relative efficacy and appeal of each RRI category in motivating donor recruitment and retention among different donor and non-donor segments. Most research also only considers offering each of the RRI categories as a one-off; further work is needed to understand how each RRI strategy could work as part of a broader loyalty program that maintains motivational power over the long-term.

Future research could also focus on a specific RRI strategy and explore different ways to implement it. For example, charity donations could be a fixed amount or a lottery model where x% of the money goes to the charity and the remainder is entered into a lottery that the donor can win. The x% can vary from 100% (all goes to the charity) to 75%, 50%, 25%, 0 %

(all goes to the donor). The donor chooses which x%. Different percentages would appeal to people with different motivations. For example, a person who donates blood for warm-glow, would not want to crowd-out their warm-glow by accepting an external reward (e.g., 0% to charity), so would be more likely to choose an option that minimizes personal gain and maximizes the charity gaining (e.g., 100% goes to charity). The converse is true for those who are extrinsically motivated, where there is a much smaller likelihood of crowding-out. Indeed, recent evidence support this contention.⁴⁹

Within BCA tokens, Sandner et al. (2021)⁵⁰ showed that hedonic incentives that are consumed for fun (e.g., cooler bag) are more likely to increase subsequent blood donations than utilitarian incentives that have a functional purpose (e.g., USB). Although loyalty programs are widely used by BCAs in the United States, research is needed on how to best implement such programs. Southcott et al. (2022)⁵¹ highlight several features from commercial loyalty program research that BCAs should consider when designing blood donor loyalty programs, such as the types of products donors can redeem points for (e.g., green vs non-green, fair trade), or the use of a tiered approach to encourage greater donation frequency, with higher tiers offering higher value rewards.

ACKNOWLEDGEMENT: Australian government funds Australian Red Cross Lifeblood to provide blood, blood products and services to the Australian community.

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Figure 1. Conceptualized Typology of RRI Strategies

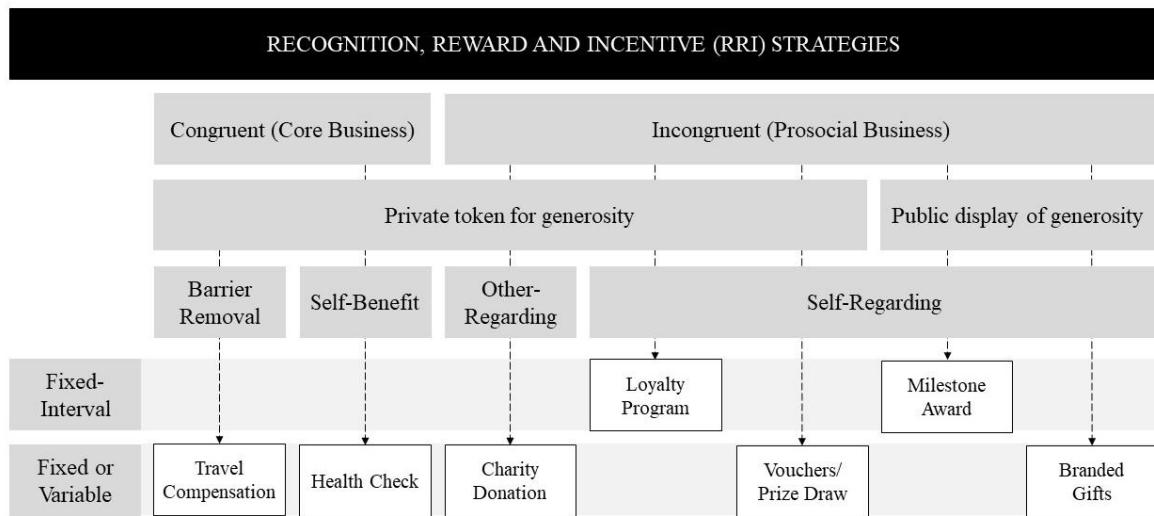
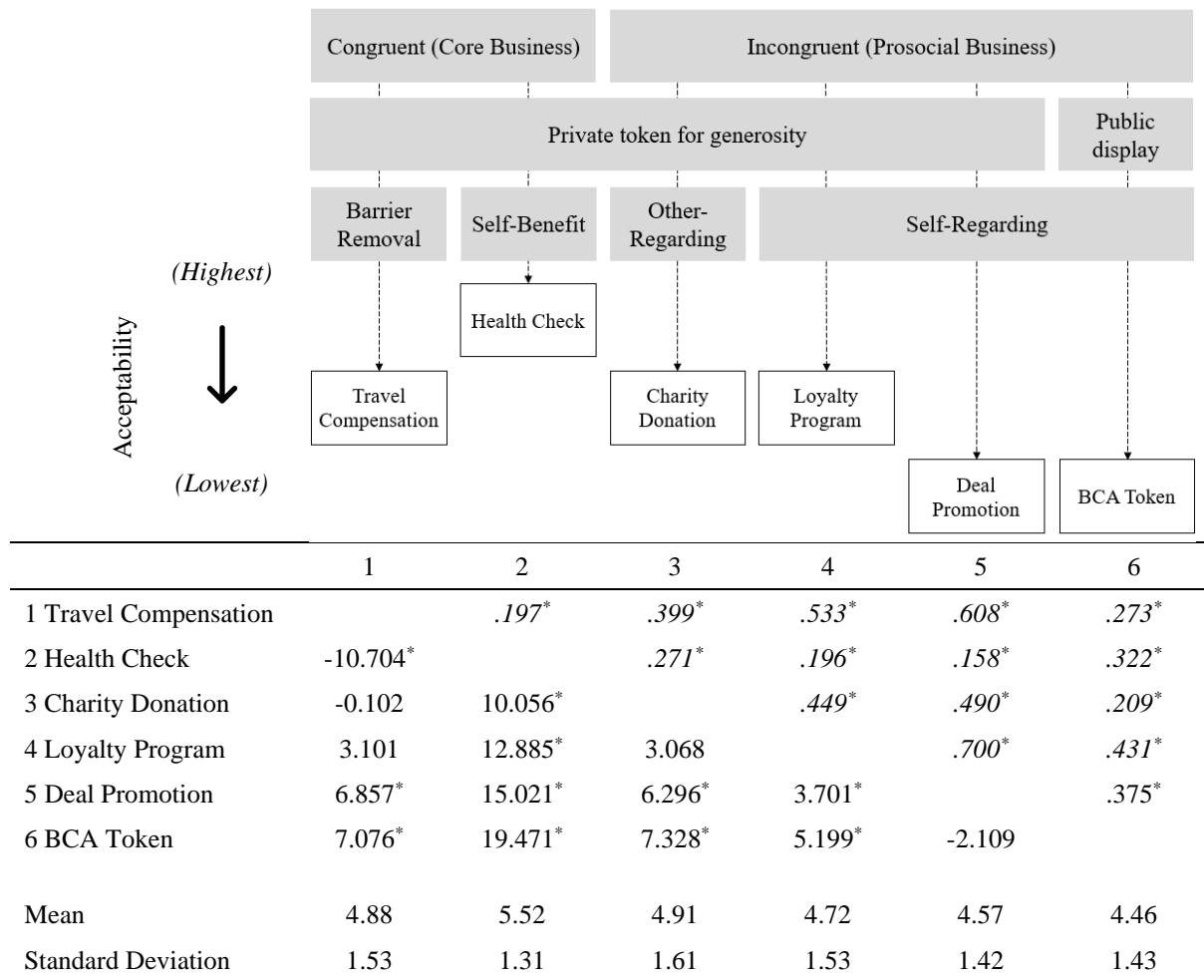


Figure 2. Pearson correlation, means and standard deviations of paired samples t-tests



Note: Pearson correlations are reported in the top half of the matrix in italics, and t-values reported in the lower half of the matrix. * $p < .003$ (Bonferroni alpha adjustments applied; $p < 0.05/15 = 0.003$)

Table 1. Summary of Factor Analysis Solutions

Solution	7-Factors	6-Factors	5-Factors
Total variance explained	73.23%	69.57%	65.58%
Number of items cross-loading (>.4)	8	2	2
Highest cross-loading value	.484	.323	.313

Table 2. Six-factor solution: Factor loadings and internal reliability

	Factor Loadings					
	1	2	3	4	5	6
Tickets (WB)	.776	-.037	.030	-.080	.005	.074
Tickets (P)	.773	-.043	.031	-.078	.016	.079
Tickets (BS)	.832	-.005	-.003	-.008	-.129	.060
Prize draw (WB)	.813	-.133	.049	.004	.130	-.098
Prize draw (P)	.799	-.134	.047	.012	.137	-.085
Prize draw (BS)	.828	-.091	.024	.065	-.015	-.092
Vouchers (WB)	.650	.154	-.050	-.035	.084	.069
Vouchers (P)	.649	.157	-.053	-.023	.088	.064
Vouchers (BS)	.803	.145	-.072	.037	-.105	-.003
Discounts (WB)	.515	.281	-.031	.061	.040	.005
Discounts (P)	.509	.270	-.034	.074	.048	.017
Discounts (BS)	.703	.203	-.040	.088	-.101	-.020
National loyalty program (WB)	-.001	.875	-.008	-.103	.062	-.004
National loyalty program (P)	.008	.872	-.005	-.096	.074	-.006
National loyalty program (BS)	.317	.621	.005	-.030	-.127	-.051
Local reward program (WB)	-.049	.866	.065	.013	.045	.013
Local reward program (P)	-.041	.858	.064	.016	.046	.013
Local reward program (BS)	.298	.606	.022	.094	-.139	-.045
Branded gift (WB)	.181	-.105	.846	-.099	.034	-.004
Branded gift (P)	.180	-.118	.853	-.089	.042	.010
Branded gift (BS)	.240	-.056	.735	-.038	-.066	-.051
Milestone award (WB)	-.258	.152	.774	.102	.006	.018
Milestone award (P)	-.256	.137	.769	.104	.023	.027
Milestone award (BS)	-.044	.131	.662	.078	-.082	.005
Health checks (WB)	.009	-.042	-.009	.972	.015	-.004
Health checks (P)	.001	-.057	-.001	.947	.037	-.006
Health checks (BS)	.078	-.031	.060	.646	.000	.028
Charity donation (WB)	.005	.030	-.021	.017	.976	-.009
Charity donation (P)	.011	.033	-.009	.021	.965	-.021
Charity donation (BS)	.266	.039	.016	.028	.460	.087
Travel compensation (WB)	-.007	.002	-.003	-.013	.013	.990
Travel compensation (P)	-.017	.005	-.006	-.006	.021	.992
Travel compensation (BS)	.323	-.075	.036	.079	-.097	.517
Cronbach's Alpha (α)	.948	.939	.907	.900	.912	.909

Note: Factor analysis using Principal Axis Factoring with oblique rotation, specifying a six-factor solution. WB = “Please indicate the extent to which you think [RRI strategy] might encourage or discourage someone to donate whole blood”; P = “Please indicate the extent to which you think [RRI strategy] might encourage or discourage someone to donate plasma”; BS = “If the Blood Service decided to offer [RRI strategy] to donors, would it make you feel more negative or more positive about the Blood Service”.