

BLOOD DONATION AS A PUBLIC SERVICE:
YOUNG CITIZENS' PROSOCIAL BEHAVIOUR

(Short Running Head: Young Blood Donors' Behaviour)

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ABSTRACT

Young citizens play a key role in providing a continuous blood supply for public health system. This paper examines the prosocial behaviour of young non-blood donors and analyses motivations, barriers, anticipated emotions (AEs), and intention to donate of a sample of 1,626 Spanish non-donors belonging to Generation Z and millennials. Among the main conclusions, motivations and barriers are antecedents of the AEs. Particularly, motivations (external and internal) positively influence AEs that enhance blood donation and deter AEs of not donating. Barriers (external and/or external) positively influence AEs that deter blood donation and deter AEs that enhance blood donation. Findings also demonstrate the influence of AEs in predicting intention to donate, and thus in prosocial behaviour. As different clusters of young non-donors coexist according to their motivations and barriers, the paper identifies the cluster that would reduce free-riders. Public policy may change citizens' behaviour by changing AEs that deter blood donation.

INTRODUCTION

The study of prosocial behaviour is critical for public management, particularly in times of limited resources in which governments strongly depend on prosocial acts in many aspects of society (Ritz et al. 2020). However, as literature suggests (Costa-Font

and Machado 2021; Handy and Mook 2011), there is an imbalance between the supply and demand of public goods because of the shortage of social behaviours that contribute to the improvement of common welfare. Neumann and Schott (2021) recognise the need to analyse what motivates citizens to participate in co-production. This shortage of social behaviours may be especially significant in areas in which public welfare is seriously compromised, such as blood donations (Previte et al. 2019). Voluntary blood donation can be described as a public good, as both donors and non-donors are potential users of blood banks (Abásolo and Tsuchiya 2014). Thus, non-donors may be described as free riders (Abásolo and Tsuchiya 2014; Ferguson and Lawrence 2016; Masser et al. 2020). According to Masser et al. (2020) and Ferguson et al. (2019), the low participation rates of the eligible population in blood donation campaigns would reveal free riding on the generosity of the minority. In addition, as the population ages and new donors are not recruited from the younger generation to replace lost donors, predictive models have projected impending shortages in blood supply (Ferguson and Lawrence 2019). As a result, there is a growing interest in understanding the behaviour of the young non-donor population (Suen et al. 2020; Viwattanakulvanid and Chan Oo 2021).

Understanding the antecedents of the intention to donate in the young non-donor population is a challenging task that requires considering motivations (reasons to act) (Gherasim and Gherasim 2020), barriers (costs or obstacles to act) (Bednall and Bove 2011), and anticipated emotions (AEs) (affective responses as responses to future outcomes) (Bagozzi et al. 2016). As Houston (2006) points out, blood donation is a charitable behaviour with a more complex pattern (frequency of donations, eligibility,

emotions...) than, for example, donating money or volunteering. Blood donation is a sensitive decision, in which individuals would weigh, in addition to altruistic motivations (e.g., helping to others), other personal motivations (e.g., warm glow), as well as the costs of donation (e.g., time) (Bednall and Bove 2011; Ferguson 2022; Ferguson and Lawrence 2019). Furthermore, the decision to become blood donors is not the outcome of rational decision-making, as individuals (donors and non-donors) may be affected by emotions (positive and negative) (Masser et al. 2020; Williams et al. 2018). Regarding young people who are not donors, some studies recognise that both the motivations and the barriers of the non-donor population (Padilla-Garrido et al. 2021) and young people (van Dyke et al. 2020) show distinctive patterns. The literature suggests that there is also variability within the youth population regarding their prosocial behaviour (Chen et al. 2019; Foulkes et al. 2018; Notari IV et al. 2009). In the face of an aging population and a declining blood supply as a public good, the present research aims to shed light on the antecedents of the decision to donate blood in an increasingly diverse young population.

Firstly, this research approaches the study of young non-donors by acknowledging the individual's altruistic, rational, and emotional behaviour. The proposed model explores the impact of both motivations (internal and external) and barriers (internal and external) of young non-donors on their intention to donate and suggests a matrix that describes strategic actions according to motivations and barriers to prosocial behaviour. In this regard, Self-Determination Theory (SDT) (Ryan and Deci 2020) states that intrinsic motivations have a stronger positive influence on intention to act rather than extrinsic motivations, which applies to the context of blood donation

(France et al. 2017). However, to design effective public and social marketing strategies and increase prosocial behaviour, this study also examines the barriers that young people are faced with. In addition, recognizing the heterogeneity in social behaviour among young people, the motivations and barriers that Generation Z and Millennials are faced with will be discussed as well. As Shehu et al. (2015) point out, understanding blood donor profiles would provide significant insights for recruitment and retention strategies. Secondly, considering the inexperience of young non-donors lack in the area of donation, this paper will examine AEs (positive and negative) of donating and not donating, following the proposal of Bagozzi et al. (2016). Several studies have recognized the importance of AEs in blood donation, as interventions aimed at managing emotions could be designed to change behaviours (Ferguson 2015; Ferguson et al. 2019). In particular, Bagozzi et al.'s (2016) proposal, which provides a comprehensive view of young non-donors' complex future behaviour, should be more fully addressed. Thirdly, as Ferguson et al. (2020) note, there is a need for more comprehensive studies on donor behaviour using more complex statistical models. Thus, the research model also aims to contribute to the literature through a holistic model that simultaneously analyses the role of motivations (internal and external) and barriers (internal and external) in AEs (positive and negative) of action and non-action, as well the influence of AEs on the intention to donate blood.

To achieve this goal, the paper is structured as follows. Section 2 presents the literature review, which serves as the theoretical basis of the research. Section 3 shows the hypotheses of the proposed model. Following this, Section 4 describes the

methodology of the study. Section 5 shows the research analysis and results. Finally, Section 6 discusses the results, and the main conclusions of the study are drawn.

LITERATURE REVIEW

Public Service Motivation and Prosocial Behaviour

Public Service Motivation

Public service motivation theory proposes that government employees adhere to an ethic of service to the public, commitment to the common good, and self-sacrifice rather than to self-interest (Houston 2006). Perry and Wise (1990) also explain that public service motivation is the predisposition of an individual to behave for motives fostered mainly or exclusively by public institutions and organisations. It may be extended to employees of public service organisations in general, which affects both public and non-profit organisations (Houston 2006). However, Esteve et al. (2016) point out that public service motivation would be a behavioural predisposition of any individual, regardless of where or whether they are employed, and not a feature of public sector. Similarly, Neumann and Schott (2021, p. 3) note that public service motivation and its outcomes “may also be present among individuals in their role as citizens” (Neumann and Schott 2021, p. 3).

Prosocial Behaviour

Prosocial motivation is related to pursuing the interests of others at the expense of one's own, wanting to help others, and expending effort to benefit others (Grant and Shandell 2022). For instance, Piatak and Holt (2020) describe formal volunteering, informal volunteering, and blood donation as prosocial behaviours. Based on the

hierarchical model of motivation (Vallernand 1997), Grant and Berg (2010) explain three levels of prosocial motivation at work, which may be extended to citizens: global prosocial motivation (prosocial values of common good or promoting the welfare of others in general), contextual prosocial motivation (helping a specific individual or group in a specific domain), and situational prosocial motivation (helping a specific individual or group in a domain at a specific situation, for example, in time and space). For instance, from this perspective, an individual may be inclined to help others (global prosocial motivation), another individual may be inclined to donate blood (contextual prosocial motivation), and a third individual may be willing to donate only for emergency calls.

Public Service Motivation as a Specific Type of Prosocial Motivation

Public service motivation is linked to prosocial motivation. Houston (2006) recognises that public service motivation is related to community-focused behaviours, such as volunteering time, donating blood, and donating money, as these charitable actions represent the values associated with the public service motive (e.g., public interest, service to others and self-sacrifice). Also, it may be considered that public service motivation is a specific type of prosocial motivation which is linked to the provision of public good, as Piatak and Holt (2020) argue that many prosocial values are rooted in the motivation for public service.

Literature describes public service motivation as global and abstract (e.g., contributing to public interest) and long-term temporal (Ritz et al. 2020; Schott et al. 2019), so it may be suggested that public service motivation is related to global prosocial motivation. However, the relationship between values for the common good and the

individual's effective prosocial behaviour may present different situations. Given that engaging in prosocial behaviours for the common good may produce costs to people (e.g., time or effort) (Heine et al. 2022), individuals may choose the context or contexts (contextual prosocial motivation) in which to contribute to the public good, as suggested by Studte et al. (2019), or choose not to act at all. Given the free-rider effect, whereby an individual can enjoy public goods without contributing to its costs (Pasour 1981), it is necessary to examine the decision-making model of individuals motivated to improve public welfare and analyse what leads them to act or not to act. Furthermore, the unique aspects of prosocial behaviour in specific contexts need to be addressed.

Decision Making on Prosocial Behaviour in the Field of Public Service Motivation

According to the public goods model, Handy and Mook (2011) explain that a donor, such as a volunteer, would be a pure altruist who contributes to the public good. Ferguson (2015) defines pure altruism as behaviours related to helping others, a direct concern for the welfare of the recipient, at a personal cost, without personal gain. However, Grant and Berg (2010) note that prosocial behaviour may be related to concern for others, but it does not exclude self-interest. Piatak and Holt (2020) also add that public service motivation is a motivation towards society's general welfare, promoted by institutions and public organisations, including both self-interest and other-regarding motives. Consequently, as an alternative to the altruistic model for common good, the literature incorporates the debate on the role of the rational model in social behaviour. Ioannou (2021) notes that rational behaviour describes that people's only motivation is

the fulfilment of their desires, either social desires, private desires, or both. Therefore, they choose to engage in the activities that best satisfy such desires.

Individuals also assess the costs of involvement in the production of a good that is consumed by the collective. Prosocial behaviour for the greater good comes at a personal cost to individuals, who may have to make sacrifices (e.g., effort, time or resources) (Bierhoff 2002; Heine et al. 2022; Neumann and Schott 2021). Likewise, various studies increasingly confirm the significance of emotions (e.g., AEs) in an individual's engagement with prosocial behaviour, and it has been recognized that interventions (e.g., guided episodic thinking, educational programmes, or advertising campaigns) that aim to manage emotions might boost prosocial behaviour (Erlandsson et al. 2016; Mesurado et al. 2021). For instance, Mesurado et al. (2021) empirically demonstrate that promoting positive emotions in adolescents increases their willingness to act prosocially. Perry and Wise (1990) also recognise that public service motivation may be influenced by affective motives or an individual's emotional state. Based on the above, emotions should be added to the rational choice model.

On the discussion of the Pareto optimal level and public goods (Abásolo and Tsuchiya 2014; Takeuchi and Seki 2023), this holistic perspective on prosocial behaviour could shed light on the observation that, despite professing their readiness to act on altruistic grounds, individuals often end up abstaining from it.

Blood Donation: A Prosocial Behaviour to Improve Public Welfare

Blood Donation as a Prosocial Behaviour: Young Donors as Providers of a Public Good

Literature recognises blood donation both as an act linked to public service motivation and/or prosocial motivation (Esteve et al. 2016; Houston 2006; Piatak and Holt 2020). Abásolo and Tsuchiya (2014) also point out that a voluntary blood donation system may be classified as a public good, as donating blood for transfusions to strangers constitutes a form of collective giving (public good) that enables individuals to benefit without contributing (high rate of free-riding). Furthermore, the selection of blood donation as the research focus is aptly justified, as it serves as a benchmark for comparative analysis among various forms of donation in the literature on public management and prosocial behaviour, such as Houston (2006). On the uniqueness of the act of donating blood, Shehu et al. (2015) recognise the differences between blood, money, and time donor segments. Houston (2006, p. 78) notes that giving “the gift to live is much difficult to explain”.

Beyond purely altruistic motivations to contribute to the greater good, some studies recognise that individuals may consider other personal motivations, as well as the costs or barriers to their actions, in their prosocial decision-making processes (Bierhoff 2002; Costa-Font and Machado 2021). In this regard, the sustainability of the healthcare system depends on voluntary, private, non-remunerated donations (Mohammed and Essel 2018; Mugion et al. 2021). The literature, however, also outlines that individuals have altruistic and non-altruistic motives to donate blood (Bednall and Bove 2011; Mugion et al. 2021). Conversely, there are several factors that contribute to the gap between the supply and demand of blood as donating can incur costs to the individual (e.g., time, pain, fears) (Mohammed and Essel 2018; Mugion et al. 2021). Increased life expectancy

and a significant decrease in the birth rate have led to population ageing, which in turn contributes to the imbalance between the supply and demand of blood (Greinacher et al. 2010; Mugion et al. 2021). Likewise, there is a low conversion rate from first donation to repeat donations (Ferguson and Lawrence 2019). However, as Schröder et al. (2022, Abstract section, para.1) point out, “repeated prosocial behaviour is crucial for the supply of many public goods”.

It is particularly relevant to comprehend the behaviour of the young non-donor population, as they have the ability to guarantee the healthcare system's consistent and secure blood supply (i.e., Viwattanakulvanid and Chan Oo, 2021). Furthermore, young people who do not donate display a unique and intricate behaviour. For instance, McVittie et al. (2006) investigate the behaviour of blood donors and non-donors among the eligible population in the United Kingdom, uncovering two themes among non-donors: anxiety (fear of the unknown and anticipated risks) and practical difficulties (lack of information on donation process and inconvenient times and locations). Some studies suggest that younger individuals are less inclined to donate, although the impact of age on donor behaviour requires further clarification (Hyde et al. 2022). In addition, Masser et al. (2020) expose the diversity of non-donor behaviours in blood donation. Notari IV et al. (2009) report that young donors aged 16 or 17 display a higher rate of return than the age group of 18 to 24 years old. Therefore, these youngest donors are considered valuable for the sustainability of the blood donation system. As a consequence, it is necessary to conduct a more in-depth analysis of the behavioural model of the non-donating younger demographic.

Blood Donation as a Complex Process

Donating blood is a complex process that may involve purely altruistic motivations, with donors bearing the private costs and interests (Ferguson 2021; Mohammed and Essel 2018; Mugion et al. 2021). Regarding motivations to donate blood, Ferguson (2022) explains that blood donors and recipients remain anonymous, thus preventing donors from receiving direct rewards from the latter. If blood donors give purely out of motivation, they are assisting another individual at a personal expense, with no rewards. Literature also recognises “reluctant altruism” as a type of negative cooperation, where donors help because they do not trust that others will help. Thus, reluctant altruism would contribute to reducing levels of free-riding (Ferguson 2022; Ferguson and Lawrence 2016). However, although blood donation behaviour might be considered altruistic, the motivations for donating blood might not be. Regarding motivations to act, SDT (Ryan and Deci 2020) explains that there are diverse types of motivations, such as intrinsic motivations (e.g., an individual value, an activity or behaviour from a sense of personal commitment) and extrinsic motivations (e.g., an individual experiences societal pressures to undertake certain actions to achieve a specific reward). Although both motivations have consequences, internal motivations (IMs) are more internalised, thus exerting a greater and more persistent impact on human behaviour compared to external motivations (EMs). This is supported by blood donation literature, such as France et al. (2017). According to Hyde et al. (2022), while intrinsic motivations enhance donation, extrinsic motivations provide the ideal conditions for donation.

Regarding costs of donating blood, a barrier is any obstacle or handicap (e.g., fears, lack of information, unsuitable timetable) (Bednall and Bove 2011). Ferguson and Lawrence (2019) indicate that blood donation is a voluntary act where individuals donate blood at their personal expense (e.g., time, pain, discomfort, fears), and Ferguson (2022) describes blood donors as high-cost cooperators. The literature differentiates between internal and external barriers to consumer behaviour (Sabah 2019). Internal barriers (IBs) refer to hindrances to action related to inward or personal reasons, such as impressions, ideas or convictions, that can exclusively be analysed internally (at the physical and psychological level). External barriers (EBs) respond to circumstances that are external to the individual and are experienced in the same way by several individuals. These barriers can be analysed and controlled outside of specific individuals. For example, in regard to blood donation, psychological and physical barriers (Martín-Santana et al. 2020) are IBs, and time-space barriers (Romero-Domínguez et al. 2021) are classified as EBs. Although there is significant interest in examining how motivations influence consumer behaviour (Durmaz and Diyarbakırlıoğlu 2011) and, to a lesser extent, barriers, as demonstrated by Schüler et al. (2020), there is still a lack of adequate research on differentiating between internal and external motivations and barriers.

AEs as Predictors of Intention to Donate in the Non-Donor Population

As a prosocial cooperative act, blood donation is motivated by prosocial emotions (e.g., guilt, empathy) (Ferguson, 2021). Given the lack of tangible incentives, it may be beneficial to introduce young, potential donors to hypothetical future scenarios to address their lack of experience in donation. The role of emotions in the anticipation of future

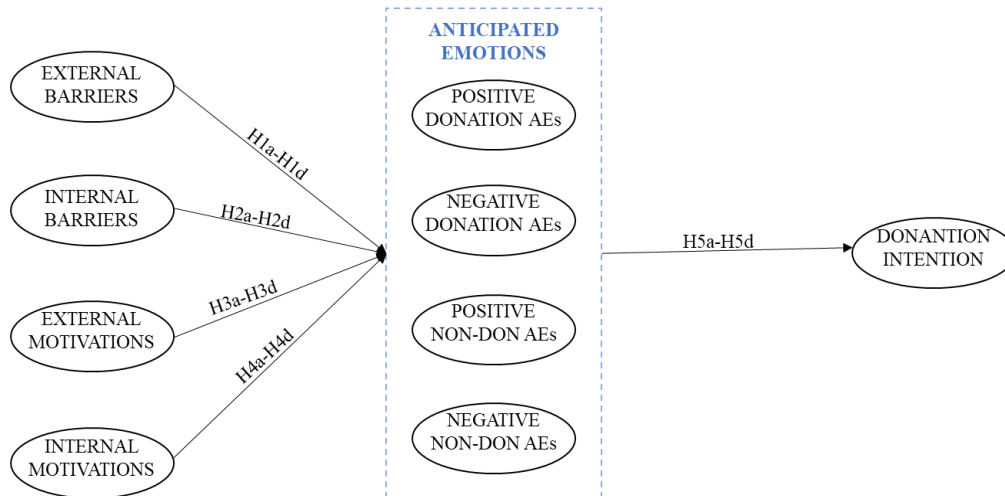
situations has been recognised as a key factor in decision making in prosocial behaviour (Hallford et al. 2020). As Masser et al. (2020, p. 176) point out, “donating blood is an affectively provocative behaviour”. Ferguson et al. (2019) also state that blood donation is a planned behaviour, in which affective states have a key role in translating this “planning” into action. Consequently, the decision to become blood donors is not the outcome of rational decision-making, as individuals (donors and non-donors) may be affected by emotions (positive and negative) (Masser et al. 2020; Williams et al. 2018). As Erlandsson et al. (2016) point out, one important motivation for individuals behaving prosocially is that they want to avoid negative emotions (e.g., anticipated guilt if not helping) and feel positive emotions (e.g., anticipated warm glow if helping).

As the target population is non-donor youth, this research focuses on AEs or emotional responses to future situations. Bagozzi et al. (2016) explain that, before making decisions, individuals forecast their beliefs about their emotional reactions as responses to future outcomes. Given that a future situation can generate both positive AEs (e.g., pride or joy) and negative AEs (e.g., regret or anger) (Bettiga and Lamberti 2018; Escadas et al. 2019), AEs may be examined under different future scenarios. Thus, AEs can be studied in scenarios where the individual would decide to act or not to act, as evidenced by Bagozzi et al. (2016). As the literature claims (i.e., DeWall et al., 2016), the impact of AEs on consumer behaviour requires more studies. The proposed research highlights AEs as a response of the young non-donor population to hypothetical future situations that might influence their willingness to engage in prosocial behaviour, as suggested by Gaesser et al. (2015) and Hallford et al. (2020).

RESEARCH MODEL AND HYPOTHESES DEVELOPMENT

This research presents two phases of analysis. In the first phase, the research model (Figure 1) suggests that both motivations (internal and external) and barriers (internal and external) influence AEs in the direction indicated by the formulated hypotheses. In addition, AEs would influence the intentions to donate. In a second phase, a comparative analysis of Generation Z and Millennials based on a diagnostic matrix is developed.

Figure 1. Research model and hypotheses



First Phase: Hypotheses Testing

The Role of Motivations and Barriers in AEs

There is a growing line of research on the study of motivations and barriers in AEs. For instance, Erlandsson et al. (2016) confirm that personal responsibility can be used to help influence anticipated guilt for not helping and anticipated warm glow for helping. Rezvani et al. (2017) also examine motivations and barriers against sustainable consumption and the role of AEs in consumer behaviours. They point out that consumer

AEs have a key role in prosocial behavioural intention, and they should be considered when designing promotion programmes by policymakers.

Based on the above, this research sheds light on the literature with a holistic vision by analysing the role of EBs, IBs, EMs and IMs in AEs in its four domains: AEs (positive and negative) of action and non-action. The following hypotheses (H1, 2, 3 and 4) are formulated, along with four corresponding sub-hypotheses:

H1. EBs to donating blood influence AEs:

H1a. EBs reduce positive AEs of donation (P_AED).

H1b. EBs increase negative AEs of donation (N_AED).

H1c. EBs increase positive AEs of non-donation (P_AEND).

H1d. EBs reduce negative AEs non-donation (N_AEND).

H2. IBs to donating blood influence AEs:

H2a. IBs reduce positive AEs of donation (P_AED).

H2b. IBs increase negative AEs of donation (N_AED).

H2c. IBs increase positive AEs of non-donation (P_AEND).

H2d. IBs reduce negative AEs of non-donation (N_AEND).

H3. EMs to donating blood influence AEs:

H3a. EMs increase positive AEs of donation (P_AED).

H3b. EMs reduce negative AEs of donation (N_AED).

H3c. EMs reduce positive AEs of non-donation (P_AEND).

H3d. EMs increase negative AEs of non-donation (N_AEND).

H4. IMs to donating blood influence AEs:

- H4a. IMs increase positive donation-related AEs of donation (P_AED).
- H4b. IMs reduce negative donation-related AEs of donation (N_AED).
- H4c. IMs reduce positive non-donation-related AEs of non-donation (P_AEND).
- H4d. IMs increase negative non-donation-related AEs of non-donation (N_AEND).

AEs and Donation Intention (DI)

AEs play a key role in prosocial behaviours, as evidenced by literature. In this regard, Erlandsson et al. (2016) explain that, whilst individuals are primarily motivated to practise prosocial behaviour in order to avoid negative emotions (e.g., guilt) and experience positive emotions (e.g., pride), scholarly literature on the subject currently lacks separate studies on the simultaneous effect of both types of emotions. Schneider et al. (2017) suggest that encouraging individuals to anticipate their emotions on prosocially oriented decisions is an innovative and undervalued approach to foster prosocial behaviours. In this regard, there is a limited body of research on blood donation, with exceptions, such as Jaafar et al. (2017) and France et al. (2020).

Regarding young blood non-donors, this paper hypothesizes that positive AEs of action (blood donating) and negative AEs of inaction (blood non-donating) enhance the intention of blood donating, and that negative AEs of action (blood donating) and positive AEs of inaction (blood non-donating) deter the intention of blood donating. Therefore, the following hypothesis (H5) can be formulated, along with four corresponding sub-hypotheses:

H5. AEs influence DI:

H5a. Positive AEs of donation (P_AED) increase DI.

H5b. Negative AEs of donation (N_AED) decrease DI.

H5c. Positive AEs of non-donation (P_AEND) decrease DI.

H5d. Negative AEs of non-donation (N_AEND) increase DI.

Second Phase: Developing a Marketing Strategies Matrix

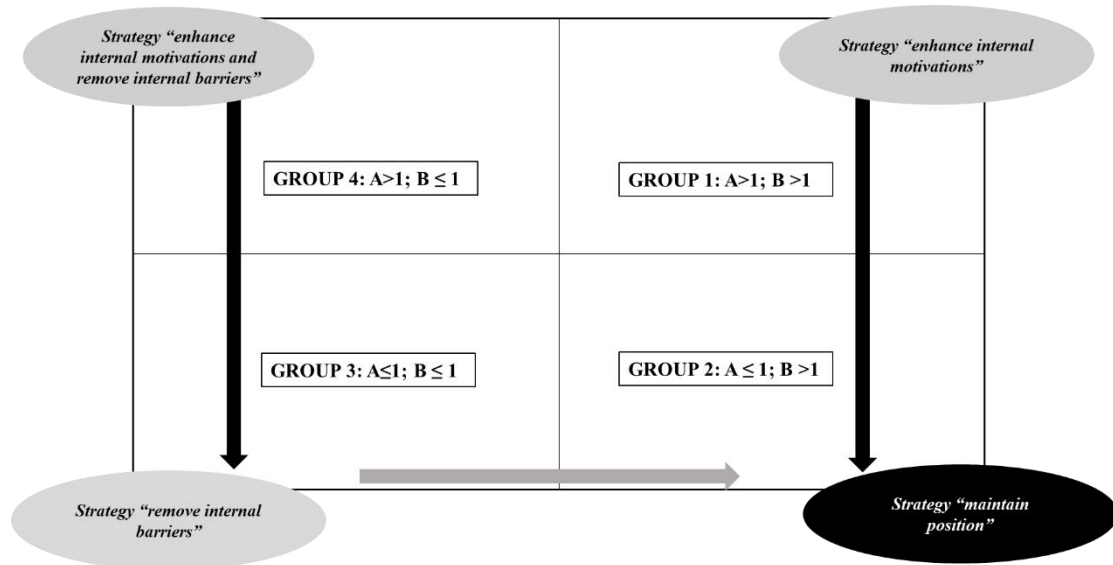
In a second phase of the research, upon verifying the hypotheses regarding the proposed motivations and barriers, the study will be completed with two additional exercises. Firstly, the study will analyse contrasting behaviour patterns exhibited by Generation Z and Millennials to determine potential heterogeneity within the young population across age groups, as suggested by some authors (i.e., Piersma and Merz 2019).

Secondly, another stage of the research involves creating a marketing roadmap matrix to identify the profile of young people who fit into each quadrant of the matrix and are positioned in the EMs/IMs and EBs/IBs ratios. Based on SDT, this research aims to identify young people who are dominated by IMs and who are therefore more likely to donate. However, this study additionally examines the barriers (both internal and external) to non-donation, surpassing the motivational continuum proposed by SDT (Ryan and Deci 2020). In the end, this research presents a two-dimensional motivation-barrier matrix (marketing roadmap matrix), based on the calculation of two ratios, EMs/IMs (ratio A) and EBs/IBs (ratio B), with four resulting areas. Thus, individuals were classified into four groups: Group 1, those with a ratio $A > 1$ and a ratio $B > 1$, i.e., young people who present more external than internal motivations and more external

than internal barriers; Group 2, individuals with $A \leq 1$ and a ratio $B > 1$, i.e., young people who present more internal than external motivations and more external than internal barriers; Group 3, individuals with $A \leq 1$ and a ratio $B \leq 1$, i.e., young people who have more internal than external motivations and more internal than external barriers; and Group 4, individuals with $A > 1$ and a ratio $B \leq 1$, i.e., young people who have more external than internal motivations and more internal than external barriers. A starting premise is that IMs are more internalised and, therefore, increase the DI. For instance, Suen et al. (2020) explain that people are more likely to donate when internally motivated (such as altruism) rather than when externally motivated. On the other hand, the literature highlights the influence of IBs on the DI. Thus, Shera et al. (2017) also demonstrate that fear of catching deadly infections, lack of proper septic measures and fear of needles are the main factors deterring blood donation among students. Based on these premises, young non-donors belonging to Group 2 could be categorized as individuals who are more inclined to make donations and whose dedication could transform them into advocates of the service and social values. The remaining quadrants of the matrix would demand personalised strategic actions, in which Group 2 could play a key role in making young people migrate between quadrants. Thus, Figure 2 presents the marketing roadmap matrix, with the four areas and the marketing strategies to be implemented in each quadrant. At the action agenda level, each group's position indicates the following recommended strategies: Group 1 - "enhance internal motivations", Group 2 - "maintain position", Group 3 - "remove internal barriers", and Group 4 - "enhance internal motivations and remove internal barriers". In particular, improving the conduct

of Group 2 can enhance the efficacy and efficiency of public management in promoting blood donation.

Figure 2. Marketing roadmap matrix



As Boenigk and Leipnitz (2016) recognise, the success of non-profit organisations hinges on the efficacy of new donor recruitment strategies. Our research aims to reveal bespoke strategies that match the profile of each cluster of young non-donors.

METHODOLOGY

Sampling

Non-donors of blood from Generation Z and Millennials, aged 18 to 35 and citizens of Spain, were selected to participate in this study. This subsample is derived from a bigger study of 35,982 Spanish donors and non-donors aged between 18 and 65

years. Data was collected via an online self-administered questionnaire between March and September 2018. Fourteen of the 17 regional blood transfusion centres (BTCs) in Spain and 24 of the 83 Spanish public and private universities participated in the data collection process. In Spain, blood donation is the responsibility of these BTCs which are classified as ‘health centres for the collection and analysis of human blood or their components, regardless of the purpose that they are used for, including treatment, storage and distribution when they are used for transfusion’ (Ministerio de Sanidad y Consumo 2005, p. 31292).

BTCs emailed their registered donors with the URL of the online platform hosting the questionnaire. They also shared the URL of the survey with an invitation message via their primary social media accounts (especially Facebook and Twitter) and their own platforms (e.g., official websites, newsletters, blogs). Additionally, universities also spread the invitation to the whole university community (teachers, students, and staff) through their institutional e-mail service. The research team chose this method due to the Data Protection Law hindering direct access to the emails of BTC donors and university members. In accordance with the Data Protection Law, the researchers ensured complete confidentiality of the participants. No other person could provide their sociodemographic data via the questionnaire. As a result, ethical approval was unnecessary for this procedure.

During the period of data collection, an email was weekly dispatched to all the collaborators belonging to BTCs and universities, reiterating the value of achieving a substantial number of participants in the sample.

The final sample consisted of 626 participants. Table 1 shows their sociodemographic profile. The sample had a higher rate of women (76.7%) than men. Most respondents were younger than 25 years of age (69.9%), had a university degree (53.4%), were not employed (57.9%) and earned less than 2,000€ a month (59.3%).

Table 1. Sample profile

Characteristics	N	%
Sex		
Male	379	23.3
Female	1,247	76.7
Age (years)		
18-25	1,136	69.9
26-35	490	30.1
Education		
No education or primary	51	3.1
Secondary	706	43.4
University	869	53.4
Studying at University		
Yes	1,106	68.0
No	520	32.0
Working		
Yes	684	42.1
No	942	57.9
Total monthly income (€)		
≤1,000-2,000	964	59.3
2,001-4,000	481	29.6
>4,000	181	11.1
Total	1,626	100.0

Measures

External Barriers (EBs)

EBs are external barriers that can prevent non-donors from donating blood for the first time. These barriers were measured using eight dichotomous items (Yes/No)

adapted from the literature (i.e., Boenigk and Leipnitz 2016; James et al. 2013; Shaz et al. 2010), which are shown in Appendix A. The barriers were grouped into two categories: informative (3 items) and time-space (5 items).

Internal Barriers (IBs)

IBs are internal barriers that can prevent non-donors from donating blood for the first time. These barriers were measured using 10 dichotomous items (Yes/No) adapted from the literature (i.e., James et al. 2013; Shaz et al. 2010), which are shown in Appendix A. These barriers were grouped into three categories: personal (4 items), physical (2 items), and psychological (4 items).

External Motivations (EMs)

EMs are external motivations that can provide incentives to encourage individuals to donate. These motivations consist of 14 dichotomous items (Yes/No) adapted from the literature (i.e., Beerli-Palacio and Martín-Santana 2015; Charbonneau et al. 2015; Solomon 2012), which are shown in Appendix B. These motivations were grouped into three categories: incentives (5 items), promotional campaigns (4 items), and social pressure (5 items).

Internal Motivations (IMs)

IMs are internal motivations related to an individual's altruistic behaviour. These motivations were measured using 11 dichotomous items (Yes/No) adapted from the literature (i.e., Beerli-Palacio and Martín-Santana 2015, Charbonneau et al. 2015), which are shown in Appendix B. They may be further classified into two categories originating from pure intentions (4 items) or self-interest (7 items).

Anticipated Emotions (AEs)

A scenario-based question was used, which has been employed in previous studies on AEs (Bagozzi et al. 2016; Escadas et al. 2019). A series of positive and negative AEs were included for each decision (“not to donate” and “to donate”) and were measured using a 7-point Likert scale, where 1 meant “strongly disagree” and 7 meant “strongly agree”. Positive AEs of donation (P_AED) were happy, proud and satisfied. Negative AEs of donation (N_AED) were worried, regretful and anxious. Positive AEs of non-donation (P_AEND) were satisfied with their decision and calm. Negative AEs of non-donation (N_AEND) were disappointed, guilty and angry at themselves. The decision to measure positive and negative AEs separately (both related to donation and non-donation) was based on the consideration that they represent two separate psychological systems, rather than opposing sides of the same construct (e.g., Perugini and Bagozzi 2001; Zampetakis et al. 2016). To adjust the scales, emotions included in the classic AEs scales were initially extracted (Bagozzi et al. 2016; Perugini and Bagozzi 2001), followed by the identification of emotions more specific to the blood donation field (e.g., Conner et al. 2013).

Donation Intention (DI)

Two items were used on a 7-point Likert scale to gauge the intention to donate (Godin et al. 2014; Masser et al. 2012), with 1 representing “strongly disagree” and 7 representing “strongly agree”. (to donate). The items refer to donating blood within the next four years and the willingness to become a consistent donor (twice or more times a year).

While AEs and DI are reflective constructs, all other constructs in the presented theoretical model are outlined as formatives.

All measurement scales were pre-tested by 14 experts belonging to Spanish BTCs. These experts validated the content of the scales, and their suitability for the blood donation context. In addition, the online questionnaire was pre-tested with a sample of individuals to ensure that the questions were properly understood.

ANALYSIS AND RESULTS

This results section has been structured into 5 sub-sections. In the first sub-section, the measurement scales were validated and in the second sub-section the proposed structural model was estimated, using PLS-SEM in both instances. The third sub-section analysed the existence of heterogeneity in the prevalence of barriers and motivations among young non-donors, as this may impact their behaviour. In the fourth sub-section, the sample of young non-donors underwent segmentation into four groups based on the motivation-barrier balance, which was represented through a roadmap matrix. Next, the profile of these four groups was examined based on the variables analysed in the study (IMs, EMs, IBs, EBs, AEs and DI). Finally, in the fifth sub-section, we analysed the presence of significant differences between the four groups formed in the preceding section according to their socio-demographic profile.

Validation of the Measurement Scales

A partial least squares estimation (PLS) was chosen for this research. The reason for this decision is that PLS is recommended when the model involves formative

constructs. SmartPLS3 was utilised to conduct both the measurement model analysis and structural model analysis.

PLS-SEM is conducted in two stages. First, we conducted an analysis of the measurement model, which was then followed by an analysis of the structural model (Hair et al. 2019). Given that the proposed model includes second-order constructs (barriers and motivations), SmartPLS previously necessitated applying the steps recommended by Aldás-Manzano (2012) in order to implement the build-up approach method.

Diamantopoulos's (2008) recommendations were taken into account for validating the formative scales. The scores of variance inflation factor (VIF) were below 1.5 (see Table 2), which confirmed the non-existence of multicollinearity among the indicators (Hair et al. 2019). Also, indicator weights and their significance were analysed to determine their relevance (Hair et al. 2019). As the result of this analysis, all weights were considered to be significant (Table 2), except for variable "INC", which was retained for content validity of the dimension due to its significant loading despite its value below 0.5 (Hair et al. 2019).

Individual reliability, internal consistency, convergent validity and discriminant validity must be assessed on the reflective scales (see Tables 2 and 3).

The individual reliability of the items was considered acceptable, as the loadings had a λ value higher than the threshold of 0.7 established by Hair et al. (2019).

The values de composite reliability (CR) and Cronbach's alpha corroborated the internal consistency of the reflective scales (Hair et al. 2019), as they exceed the

minimum of 0.7, except for DI, where the alpha value is 0.608. The rho_A values were higher than 0.7 (Dijkstra and Henseler 2015), with the exception of DI, which stands at 0.666.

The average variance extracted values (AVE) were also above the recommended value of 0.5 (Hair et al. 2019) indicating good convergent validity, which indicates that more than 50% of the construct was explained by its indicators.

Table 2. Results of measurement models

Constructs	VIF	Weight	Loading	Alpha	CR	rho_A	AVE
EBs							
INF_BAR	1.087	0.722***		n.a.	n.a.	n.a.	n.a.
TIME_SPAC_B AR	1.087	0.518**					
IBs							
PERS_BAR	1.075	0.395***					
PHYS_BAR	1.358	0.247***					
PSYC_BAR	1.420	0.667***					
EMs							
INC	1.063	-0.042	0.193**				
PROM_CAMP	1.320	0.668***					
SOC_PRES	1.352	0.498***					
IMs							
ALT	1.278	0.579***					
SELF_INT	1.278	0.589***					
Positive AEs of donation (P_AED)				0.924	0.951	0.930	0.867
P_AED1			0.926***				
P_AED2			0.927***				
P_AED3			0.941***				
Negative AEs of donation (N_AED)				0.709	0.835	0.721	0.629
N_AED1			0.828***				
N_AED2			0.748***				
N_AED3			0.801***				
Positive AEs of non-donation (P_AEND)				0.735	0.850	0.734	0.654
P_AEND1			0.751***				
P_AEND2			0.835***				
P_AEND3			0.837***				
Negative AEs of non-donation (N_AEND)				0.890	0.931	0.908	0.818

Constructs	VIF	Weight	Loading	Alpha	CR	rho_A	AVE
N_AEND1			0.914***				
N_AEND2			0.905***				
N_AEND3			0.894***				
DI				0.608	0.831	0.666	0.713
DI1			0.780***				
DI2			0.904***				

Note: EBs-external barriers, INF_BAR-informative barriers, TIME_SPAC_BAR-time-space barriers, IBs-internal barriers, PERS_BAR-personal barriers, PHYS_BAR-physical barriers, PSYC_BAR-psychological barriers, EMs-external motivations, INC-incentives, PROM_CAMP-promotional campaigns, SOC_PRES-social pressure, IMs-internal motivations, ALT-altruism, SELF_INT-self-interest, P_AED- positive AEs of donation, N_AED-negative AEs of non-donation, P_AEND-positive AEs of non-donation, N_AEND-negative AEs of non-donation, DI-donation intention, VIF-variance inflation factor; Alpha– Cronbach’s alpha; CR- composite reliability; AVE – average variance extracted; n=3,000 subsamples; *** p -value < 0.001; ** p -value < 0.01.

Discriminant validity was analysed according to Fornell and Lacker’s criterion (Hair et al. 2019). As shown in Table 3, the square root of the AVE of each construct exceeds the correlations between the other constructs (see the diagonal in italics in Table 3) and the HTMT values fell below 0.9. These results indicate that there is discriminant validity.

Table 3. Discriminant validity of model constructs

Constructs	P_AED	N_AED	P_AEND	N_AEND	DI
P_AED	<i>0.931</i>	0.351	0.346	0.436	0.498
N_AED	-0.270	<i>0.793</i>	0.506	0.184	0.557
P_AEND	-0.286	0.368	<i>0.809</i>	0.497	0.489
N_AEND	0.399	-0.146	-0.396	<i>0.905</i>	0.480
DI	0.396	-0.377	-0.330	0.366	<i>0.844</i>

Note: P_AED- positive AEs of donation, N_AED-negative AEs of donation, P_AEND-positive AEs of non-donation, N_AEND-negative AEs of non-donation, DI-donation intention, n=3,000 subsamples. The square root of the AVE of each construct (on the diagonal), HTMT (upper the diagonal) and correlations between constructs (below the diagonal).

Structural Model Analysis

Structural model results were analysed to test relationships between the variables. Path coefficients (β), R^2 determination coefficients (variance explained) and Q^2 values (cross-validated redundancy) were examined (Hair et al. 2019). In addition, in line with Hair et al. (2019), bootstrapping (3,000 resamples) was used in generating t -statistics. Table 4 summarises the results obtained and the contrast of the hypotheses.

A preliminary step should be to conduct a study on the multicollinearity among the antecedent variables of each of the endogenous variables. All the VIF values are less than 1.5 and are below the maximum threshold of 3 (Hair et al. 2019), so there is no multicollinearity.

The structural model is assessed concerning R^2 for each dependent variable and the significance of the paths. R^2 informs about the model's predictive capability and the combined impact of the exogenous variables on endogenous variables, which must not be below 0.1 (Falk and Miller 1992), as demonstrated in this study. The predictive power of the theoretical/structural model was also examined by calculating Q^2 indexes, which were greater than zero. Therefore, it can be stated that the model has a satisfactory predictive capability.

Table 4. Comparison of hypotheses

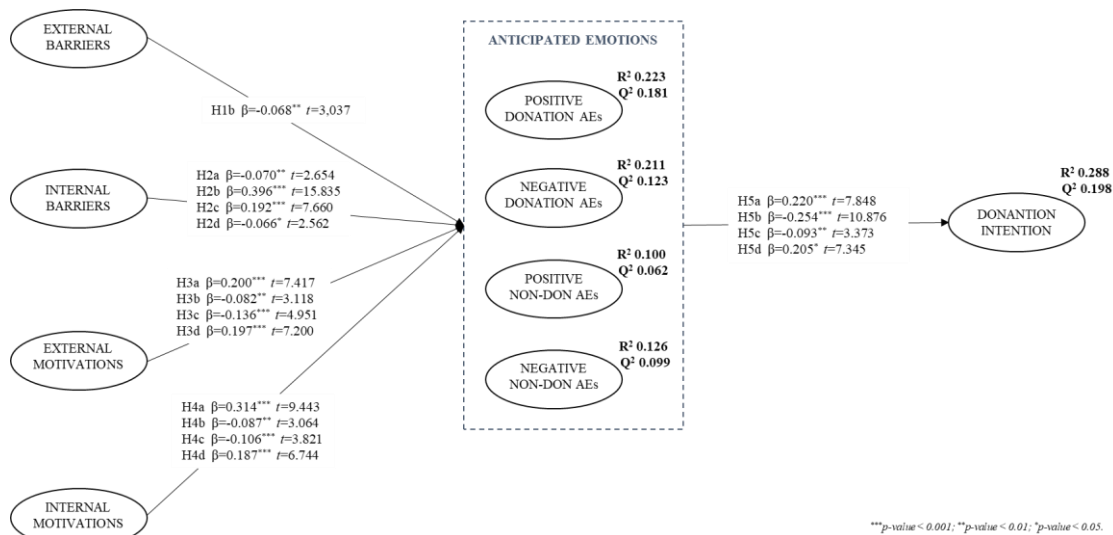
	Path Coeff(β)	t -statistics	R^2	Q^2	Results of hypotheses test
H1a EBs→P_AED	0.001	0.062			Not accepted
H1b EBs→N_AED	-0.068**	3.037			Accepted
H1c EBs→P_AEND	-0.039	1.648			Not accepted
H1d EBs→N_AEND	0.044	1.924			Not accepted
H2a IBs→P_AED	-0.070**	2.654			Accepted

H2b IBs→N_AED	0.396 ^{***}	15.835	Accepted
H2c IBs→P_AEND	0.192 ^{***}	7.660	Accepted
H2d IBs→N_AEND	-0.066 [*]	2.562	Accepted
H3a EMs→P_AED	0.200 ^{***}	7.417	Accepted
H3b EMs→N_AED	-0.082 ^{**}	3.118	Accepted
H3c EMs→P_AEND	-0.136 ^{***}	4.951	Accepted
H3d EMs→N_AEND	0.197 ^{***}	7.200	Accepted
H4a IMs→P_AED	0.314 ^{***}	9.443	Accepted
H4b IMs→N_AED	-0.087 ^{**}	3.064	Accepted
H4c IMs→P_AEND	-0.106 ^{***}	3.821	Accepted
H4d IMs→N_AEND	0.187 ^{***}	6.744	Accepted
H5a P_AED→DI	0.220 ^{***}	7.848	Accepted
H5b N_AED→DI	-0.254 ^{***}	10.876	Accepted
H5c P_AEND→DI	-0.093 ^{**}	3.373	Accepted
H5d N_AEND→DI	0.205 ^{***}	7.345	Accepted
P_AED		0.213	0.181
N_AED		0.211	0.123
P_AEND		0.100	0.062
N_AEND		0.126	0.099
DI		0.288	0.198

Note: EBs-external barriers, IBs-internal barriers, EMs-external motivations, IMs-internal motivations, P_AED-positive AEs of donation, N_AED-negative AEs of donation, P_AEND-positive AEs of non-donation, N_AEND-negative AEs of non-donation, DI-donation intention, n=3,000 subsamples; ^{***}*p-value* < 0.001; ^{**}*p-value* < 0.01; ^{*}*p-value* < 0.05.

Coefficients (β) show the relationships among the model variables (Hair et al. 2019). All relationships were considered significant, with the exception of (1) EBs and positive AEs of donation, (2) EBs and positive AEs of non-donation, and (3) EBs and negative AEs of non-donation, which respectively indicated rejection. Therefore, H1a, H1c and H1d were rejected, while the rest of the hypotheses were accepted, as seen in Figure 3.

Figure 3. Results of proposed model



Analysis of Heterogeneity in the Prevalence of Barriers and Motivations for Donation among Young People

Once it has been shown that motivations and barriers are antecedents of AEs, it is necessary to analyse whether there is homogeneity in young people's behaviour. For this, we conducted a chi-square analysis to compare the percentage prevalence of barriers and motivations between Generation Z and Millennials (see Appendixes A and B).

Appendix A indicates that there are significant disparities in only 5 of the 18 barriers analysed, with no differences in the personal and psychological barriers among generations. Regarding informational barriers, Generation Z presents a higher prevalence in the barriers related to the lack of information on the donation process, donation requirements, collection sites and centre opening hours (BAR1=38.0% and BAR2=40.8%). Regarding spatial-temporal barriers, incompatibility with timetables is more prevalent in Generation Z (BAR5=34.5%), and the difficulty of parking is more

prevalent in Millennials (BAR8=17.8%). Finally, fear of physical discomfort is more prevalent in Generation Z (BAR13=41.7%). From Appendix B, it can be seen that there are differences between the two generations in 12 out of the 25 analysed motivations at a significance level below 10%. In the various categories of motivation, there are differences in a minimum of two motivations, with Generation Z constantly exhibiting the highest prevalence levels, ranging from 2.70 to 8.50 percentage points.

Typologies of Young Non-Donors in Terms of Motivations-Barriers Balance

The findings of the previous analyses have prompted an investigation into whether the blood donation behaviour of young individuals is influenced by the equilibrium between their motivations and barriers. For this purpose, four new variables were created, corresponding to the sum of EMs, IMs, EBs and IBs, which each participant indicated as a factor that could motivate them to donate blood for the first time or prevent them from doing so. Given the differing ranges of these four variables, it was deemed fitting to derive the percentage prevalence of each variable for each participant. Using the provided percentage variables, a marketing roadmap matrix was constructed. Figure 4 shows the distribution of participants in these four groups through a scatter graph. The two groups having the greatest internal motivations (Group 2 and Group 3) are the most numerous. The findings underscore the social responsibility aspect linked to these two generations (Jaafar et al. 2017), with Group 2 being the most appealing due to its least IB weightage. Furthermore, this Group exhibits a lower prevalence of IMs, while experiencing the greatest IBs. Consequently, changing their behaviour would require the most effort.

Figure 4. Scatterplot of the groups

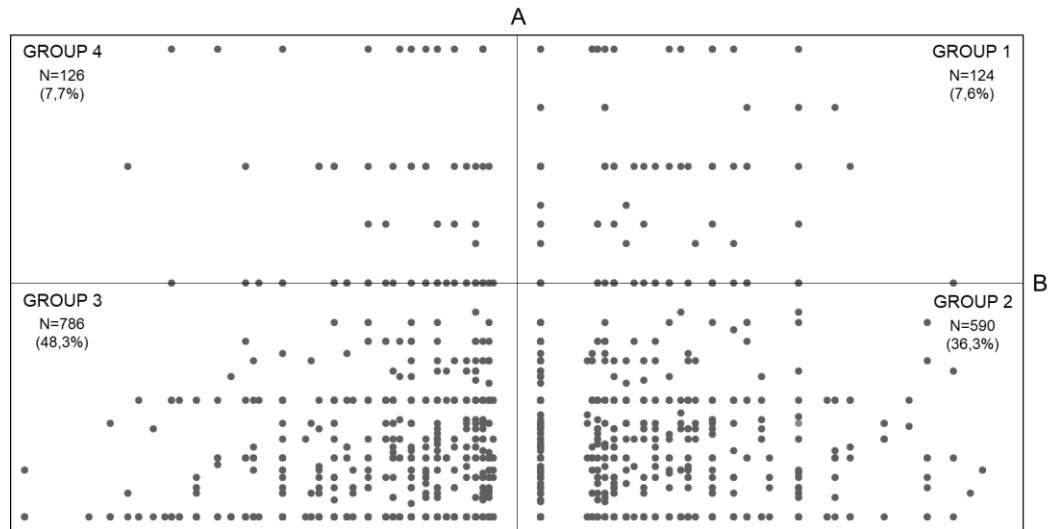


Table 5 presents a one-way ANOVA analysis testing for mean variations among the variables featured in the model, the percentage variables, and the A and B ratios. The Tukey's test is also included to provide additional insights. The results indicate that there are significant differences in all the variables analysed, except for positive AEs of donation (P_AED) ($F=2.078, p=0.101$). As expected, the lowest levels of AEs that curb donation motivation (N_AED and P_AEND) and the highest levels of negative AEs of non-donation (N_AEND) are found in Groups 1 and 2 ($M_{N_AED.G1}=2.66$, $M_{P_AEND.G1}=2.89$, $M_{N_AEND.G1}=4.42$, $M_{N_AED.G2}=2.63$, $M_{P_AEND.G2}=2.95$ and $M_{N_AEND.G2}=4.75$), as these groups show the lowest IBs (17.5% and 18.85%, respectively).

In terms of intention to donate, Group 3 is the most reluctant to donate ($M=3.88$). Despite having a marked altruistic character, their IBs are more prevalent (34.85% vs 12.44%). Group 2 shows the highest willingness to donate ($M=4.81$) due to their

altruistic character combined with a higher prevalence of EBs that are easier to overcome (46.61% vs 18.85%). Groups 1 and 4 show a higher prevalence of EBs that are easier to overcome (46.61% vs 18.85%). In addition, although they differ in the weight of the barrier typologies ($B_{G1}=10.32$ and $B_{G4}=0.34$), Groups 1 and 4 present a profile that is more prone to external influence through incentives, advertising campaigns or social pressure (64.06% and 61.96%, respectively).

The rest of the results shown in Table 5 for the percentage variables and the A and B ratios confirm the profile of the four groups.

Table 5. Differences in behaviour between groups

Variables	Total (N=1,626)	Group 1 (N=124)	Group 2 (N=590)	Group 3 (N=786)	Group 4 (N=126)	F	p	Tukey
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)			
P_AED	6.05 (1.21)	5.95 (1.36)	6.13 (1.09)	6.03 (1.24)	5.89 (1.33)	2.078	0.101	
N_AED	2.99 (1.45)	2.66 (1.40)	2.63 (1.32)	3.23 (1.49)	3.49 (1.36)	27.595	0.000	1-3 1-4 2-3 2-4
P_AEND	3.19 (1.52)	2.89 (1.46)	2.95 (1.43)	3.36 (1.54)	3.47 (1.63)	11.609	0.000	1-3 1-4 2-3 2-4
N_AEND	4.49 (1.82)	4.42 (1.95)	4.75 (1.69)	4.37 (1.85)	4.16 (1.91)	6.622	0.000	2-3 2-4
DI	4.24 (1.64)	4.55 (1.63)	4.81 (1.45)	3.88 (1.63)	4.58 (1.69)	48.602	0.000	1-3 1-4 2-3 2-4
EBs (%)	27.84 (26.80)	46.88 (23.73)	46.61 (23.97)	12.44 (17.55)	17.26 (22.58)	343.629	0.000	1-3 1-4 2-3 2-4
IBs (%)	28.13 (21.16)	17.50 (15.91)	18.85 (17.00)	34.85 (20.93)	40.16 (22.63)	105.216	0.000	1-3 1-4 2-3 2-4 3-4

Variables	Total (N=1,626)	Group 1 (N=124)	Group 2 (N=590)	Group 3 (N=786)	Group 4 (N=126)	F	p	Tukey
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)			
EMs (%)	51.75 (19.36)	64.06 (18.89)	52.59 (16.58)	47.55 (19.67)	61.96 (20.70)	44.386	0.000	1-2
								1-3
								2-3
								2-4
								3-4
IMs (%)	69.66 (19.43)	56.09 (20.50)	64.75 (15.68)	70.66 (19.08)	53.46 (20.81)	71.208	0.000	1-2
								1-3
								2-3
								2-4
								3-4
A	0.81 (0.99)	1.49 (2.55)	0.71 (0.18)	0.67 (0.20)	1.50 (2.21)	51.492	0.000	1-2
								1-3
								2-4
								3-4
B	4.67 (13.16)	10.32 (16.99)	10.26 (18.69)	0.28 (0.34)	0.34 (0.35)	89.232	0.000	1-3
								1-4
								2-3
								2-4

Note: A= External Motivations (%)/External Motivations (%) and B= External Barriers (%)/Internal Barriers (%).

Analysis of the Differences in Young Non-Donors Typologies According to their Socio-Demographic Profile

Finally, the results in Table 6 outline the four groups' socio-demographic characteristics. Of the four variables analysed, gender and educational level show statistically significant relationships with the membership of either group ($\chi^2=23.039$, $p<0.001$ and $\chi^2=13.663$, $p=0.034$). Thus, a higher relative presence of women is observed in Groups 3 and 4 (80.8% and 82.5%, respectively), characterised by a higher prevalence of IBs ($B_{G3}=0.28$ and $B_{G4}=0.34$), compared to Groups 1 and 2, where men have a higher relative representation (32.3%, 28.1%, respectively) and where EBs prevail ($B_{G1}=10.32$ and $B_{G2}=10.26$). In terms of educational level, it is worth highlighting the greater

presence of university students in Group 4 (60.3%), characterised by a greater prevalence of IBs and EMs ($B_{G4}=0.34$ and $A_{G4}=1.50$).

Table 6. Socio-demographic profile of the groups

Characteristics	Total (N=1,626) N (%)	Group 1 (N=124) N (%)	Group 2 (N=590) N (%)	Group 3 (N=786) N (%)	Group 4 (N=126) N (%)	χ^2 (p)
Sex						
Male	379 (23.3)	40 (32.3)	166 (28.1)	151 (19.2)	22 (17.5)	23.039
Female	1,247 (76.7)	84 (67.7)	424 (71.9)	635 (80.8)	104 (82.5)	(0.000)
Age (years)						
18-25	1,136 (69.9)	88 (71.0)	431 (73.1)	526 (66.9)	91(72.2)	6.484
26-35	490 (30.1)	36 (29.0)	159 (26.9)	260 (33.1)	35(27.8)	(0.090)
Education						
No formal education or Primary	51 (3.1)	4 (3.2)	26 (4.4)	21 (2.7)	0 (0.0)	13.663
Secondary	706 (43.4)	60 (48.4)	269 (45.6)	327 (41.6)	50 (39.7)	(0.034)
University	869 (53.4)	60 (48.4)	295 (50.0)	438 (55.7)	76 (60.3)	
Total monthly income (€)						
≤2,000	964 (59.3)	69 (55.6)	347 (58.8)	477 (60.7)	71 (56.3)	3.557
2,001-4,000	481 (29.6)	37 (29.8)	176 (29.8)	230 (29.3)	38 (30.2)	(0.736)
>4,000	181 (11.1)	18 (14.5)	67 (11.4)	79 (10.1)	17 (13.5)	
Total	1,626 (100.0)	124 (100.0)	590 (100.0)	786 (100.0)	126 (100.0)	

DISCUSSION AND CONCLUSIONS

The main theoretical and practical implications of the study, as well as the limitations and future lines of research, will be explored below.

Theoretical Implications

Firstly, this research reveals that motivations and barriers are antecedents of AEs, which brings new data to the literature on AEs, as several authors demand (e.g., DeWall

et al. 2016). The findings illustrate that motivations boost AEs that enhance blood donation and deter AEs of non-donation. IBs also positively influence AEs that deter blood donation and negatively influence AEs that enhance blood donation. However, EBs only exhibit a positive and significant relationship concerning AEs of non-donation. In this regard, EBs for young non-donors (informational and time-space barriers) might not be formed in inexperienced individuals, particularly if the barriers are based on assumptions rather than a genuine situation. Secondly, this paper demonstrates the influence of AEs in predicting intention to donate, and thus in prosocial behaviour, by confirming that the AEs (positive and negative) of donation and non-donation are antecedents of the DI. As different studies (e.g., Schneider et al. 2017) suggest, individuals may change their behavioural intentions based on their emotional expectations of future action and non-action situations. Consequently, it is advisable to incorporate AEs in studies of behavioural intentions on prosocial behaviour, both in the profit and non-profit domains. Thirdly, the comparative analysis between Generation Z and Millennials shows a significant degree of heterogeneity, especially in the motivations to donate. It confirms other findings on the behaviour of different age groups within the young population (e.g., Piersma and Merz 2019).

Finally, the marketing roadmap matrix proves to be a valuable diagnostic tool for identifying diverse population groups and adapting attraction strategies to their behavioural profile. This matrix complements the findings of SDT (Ryan and Deci 2020), as it analyses motivations (internal and external) and barriers (internal and external). Thus, Group 2 can be identified as a potential role model for other groups.

Group 2 is more inclined towards IMs and, therefore, as France et al. (2017) suggested, more convinced to donate. Likewise, they are also mostly influenced by EBs, which, as Romero-Domínguez et al. (2021) suggest, are easier to manage. A significant finding in the matrix is that Groups 2 and 3, who are predominantly driven by intrinsic motivations, are more numerous. This aligns with the earlier observation about the inclination of young individuals to support social causes, as Nyaga and Mattson (2021) point out.

Practical Implications

The literature acknowledges the necessity of customising public interventions based on the donor (or non-donor) profile to enhance donations and, consequently, boost the efficiency of blood donation programmes (Mugion et al. 2021; Padilla-Garrido et al. 2021). Ferguson (2021) also suggests that a greater understanding of emotional processes related to blood donation would also contribute to developing more targeted interventions. Donor groups can be profiled, and marketing approaches for new donors can be tailored accordingly, as evidenced by Piersma and Merz (2019). At a strategic level, it is advisable to implement measures that attract young individuals from Group 3 to Group 2, as they primarily exhibit internal motivations. Once IBs are overcome, they could become not only active donors but also prescribers. The social influence of others on an individual's prosocial behaviour has been recognised in numerous studies. In the literature on public service motivation (PSM), Esteve et al. (2016) explain that individuals with high PSM behave prosocially if they interact with prosocial individuals. Therefore, if individuals with high PSM interact with individuals with low prosocial behaviour, the former will not contribute to a public good. In the literature on blood

donation, Cohn (2016), who discusses a study on blood donation in England, also highlights that the majority of donors state that they donate because others close to them do so. In sum, efforts aimed at Group 3 may incur higher costs in terms of both time and money, yet such actions are likely to be more sustainable over time than interventions targeting individuals in Group 4. Focusing efforts on Group 2 would optimise the efficacy and efficiency of public expenditure on blood donation.

In terms of specific initiatives, it is advised to design ongoing information and awareness-raising programmes involving relevant social actors, such as educational institutions (e.g., Mugion et al. 2021), in order to encourage IMs and decrease IBs. Given the halo effect of the young population in terms of social identity, involving relevant people (e.g., influencers) in social behavioural dynamization programmes and, in particular, using social networks, as proposed by Hussaini and Ahmad (2020), is recommended. At the enterprise level, companies could incorporate blood donation campaigns into their corporate social responsibility strategies, as it is expected by young employees, who identify with social causes (e.g., Duh and Dabula 2021). Finally, donation centres are also advised to include and/or discuss AEs in questionnaires, interviews and educational meetings with potential young donors, because it helps to better understand the individual's behaviour, as DeWall et al. (2016) point out.

A Sustainable Approach for the Public Management of Public Good and Social Value

Beyond specific actions to particular problems, it is also recommended to incorporate and adjust the foundational principles of various theoretical perspectives,

ranging from general management to social and public matters. The subsequent paragraphs offer some insights.

There is emerging research that explores public management through a service ecosystem approach, acknowledging that numerous stakeholders engage in direct and indirect interactions to exchange and integrate resources to deliver services (Beirão et al. 2017; Frow et al. 2019; Pinho et al. 2014). From a service (eco)system perspective, value co-creation should extend beyond the customer-firm dyad and embrace a wider context, enabling all crucial stakeholders, both internal and external to the organisation, to create value for themselves and others (Beirão et al. 2017; Pinho et al. 2014). Based on service-dominant logic (Vargo 2020), the value of the ecosystem is not focused on satisfying dyadic demands (e.g., offering a valuable service to a customer), but on the evolution, adaptability and sustainability of the system (Beirão et al. 2017; Frow et al. 2019). This theoretical framework is of great relevance and should be part of the strategic approach to decision-making in public and social management. For instance, this applies to the setting of blood donation, in which a service ecosystem encompasses several stakeholders (hospitals, blood donation services, blood donors, and blood recipients among others) to ensure a continuous minimum blood volume. In addition to catering to the necessities of the end customer (the recipient), it is also essential to meet the needs of other participants in the ecosystem, primarily blood donors. A blood donor is both a resource provider (blood provider) and a potential resource recipient (potential beneficiary), although barriers and emotions that discourage blood donation contribute to the free-rider problem.

Recently, Osborne et al. (2022), who developed an integrative framework of the public service ecosystem and value creation, provided guidelines that aid in comprehending public management from a holistic perspective. Among other considerations at the macro-level, decisions will be made regarding the types of values that are socially desirable, such as ensuring the provision of public goods to all citizens. At the meso-level, value-in-production is included, which refers to the value that can be provided to third parties who participate in the design and production processes, even though they are not direct public service beneficiaries. At the micro-level, Osborne et al. (2022) analysed how a public service influences the citizen, such as meeting needs or influencing future expectations. Based on the above, blood donation, as a public good, embodies socially accepted values at a macro-level. Donors can contribute to the design of the donation service, creating value. At a micro-level, analysing the donation experience and future expectations would provide measures of value from an individual's perspective. Furthermore, as noted by Beirão et al. (2017), value co-creation factors and outcomes entail interdependence among multiple levels of the public service ecosystem. Thus, the provision of public goods necessitates a comprehensive and continuous analysis to enhance public management, comprehend public service motivation, and promote prosocial behaviour. An example of such an approach includes analysing the behaviours and attitudes of young non-donors regarding the future impact of their participation in a donation experience, to ensure value to society and the sustainability of the public service ecosystem.

Limitations and Future Research

Finally, whilst this study presents intriguing findings, it is vital that the outcomes are verified through comparable research conducted in other regions. It would be worthwhile to investigate variation amongst age groups within the youth population. Additionally, the findings suggest the inclusion of social identity theory to examine potential moderating or mediating factors in the behaviour of non-donors and, more generally, in prosocial behaviour. Likewise, it is recommended to examine how the various levels of service ecosystem associated with blood donation influence the future behaviour of young non-donors.

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Appendix A. Differences in the prevalence of barriers by generation

Barriers	Generation Z	Millennials	χ^2 (p)
	(18-25 years) %	(26-35 years) %	
Informative			
BAR1. Lack of information about the donation process or requisites	38.0	31.8	5.685 (0.017)
BAR2. Lack of information about the location or opening times of donation venues	40.8	34.9	5.087 (0.024)
BAR3. Lack of information about the constant need for blood	29.0	25.5	2.026 (0.155)
Time-Space			
BAR4. Lack of free time	33.4	33.1	0.014 (0.906)
BAR5. Schedule incompatibility with donation venues	34.5	29.4	4.060 (0.044)
BAR6. Donation venues are located too far away	23.9	20.6	2.041 (0.153)
BAR7. Inconvenient location of donation venues	15.6	15.9	0.029 (0.864)
BAR8. Lack of parking space in donation venues	13.5	17.8	5.000 (0.025)
Personal			
BAR9. Not suitable to donate (medication, anaemia, illness, having travelled to certain countries, recent tattoos or piercings, minimum weight, pregnancy, etc.).	54.1	58.4	2.479 (0.115)
BAR10. Cultural, religious or ethical reasons	3.9	4.9	0.897 (0.344)
BAR11. Lack of willingness, interest and/or motivation to donate blood	24.2	26.3	0.823 (0.199)
BAR12. Mistrust about the possible uses of blood	11.4	9.4	1.380 (0.240)
Physical			
BAR13. Suffering physical distress (nausea, vomit, dizziness, etc.)	41.7	34.7	7.076 (0.008)
BAR14. Suffering wounds in arms due to use of needles (hematoma, irritation, etc.)	18.9	18.2	0.131 (0.717)
Psychological			
BAR15. General fear and anxiety of donation	40.2	43.5	1.484 (0.223)
BAR16. Fear of needles and/or pain	45.0	44.1	0.112 (0.737)
BAR17. Fear of seeing blood	29.0	29.4	0.030 (0.862)
BAR18. Fear of suffering anaemia	12.8	12.9	0.003 (0.959)

Appendix B. Differences in motivational anticipation by generation

Motivations	Generation Z	Millennials	χ^2 (p)
	(18-25 years) %	(26-35 years) %	
Incentives			
MOT1. Getting medical advice about my health	71.3	64.5	7.462 (0.006)
MOT2. Gaining the social recognition associated with being a regular donor (public events, certificates, etc.)	17.4	12.0	7.470 (0.006)
MOT3. Getting symbolic gifts for donating blood (t-shirts, pins, etc.)	22.9	16.7	7.802 (0.005)

MOT4. Getting symbolic rewards for my history as a blood donor	19.9	17.3	1.436 (0.231)
MOT5. Having 1-2 hours of free time at work to go donate blood	42.6	43.9	0.226 (0.635)
Promotion Campaigns			
MOT6. Having a rare or highly demanded blood type	68.0	67.1	0.104 (0.747)
MOT7. An urgent call for blood donations	91.7	89.0	3.119 (0.077)
MOT8. Seeing or listening to an advertising campaign on TV, the radio or the social media	59.9	54.5	4.194 (0.041)
MOT9. Getting a call or message from a blood donation centre	57.8	53.3	2.907 (0.088)
Social Pressure			
MOT10. Knowing the testimony of people who have received a blood transfusion	72.4	63.9	11.684 (0.001)
MOT11. Mobile units near home, workplace/academic centre or in crowded places	79.0	74.5	3.939 (0.047)
MOT12. My religion or beliefs encourage me to donate blood	25.6	24.3	0.321 (0.571)
MOT13. Donating blood is a tradition in my family	14.7	16.3	0.702 (0.402)
MOT14. Helping a relative or friend who needs blood	95.6	94.1	1.704 (0.192)
Altruism			
MOT15. Human solidarity, helping others or saving lives	97.8	97.6	0.095 (0.758)
MOT16. Fulfilling social duties or moral obligation of helping other people	78.2	81.4	2.204 (0.138)
MOT17. Donating blood is no effort	63.7	58.8	3.579 (0.059)
MOT18. Since blood cannot be artificially made, we must all collaborate	86.0	81.0	6.491 (0.011)
Self-interest			
MOT19. Personal satisfaction derived from helping others	93.6	93.1	0.146 (0.702)
MOT20. It can be good for my health	37.9	35.1	1.110 (0.292)
MOT21. Giving blood makes me feel needed and useful for society	71.8	71.0	0.111 (0.739)
MOT22. Others will have a good opinion of me	18.9	18.6	0.028 (0.867)
MOT23. Perhaps I or my relatives could need blood in the future	94.4	92.2	2.62 (0.106)
MOT24. Getting blood test results	67.4	60.0	8.327 (0.004)
MOT25. Knowing if I have an infectious disease	65.4	57.1	10.016 (0.002)