



## Intentions, Motivations, and Beliefs about Blood Donation: A Pilot Study at a Large Public University

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**Abstract:** Applying the Theory of Planned Behavior (TPB), this study provided an enhanced understanding of the intentions, motivations, and beliefs about blood donation among the young generation in the U.S. An online quantitative Qualtrics survey was administered at a large public university to collect data from the campus community, with participants aged 18 to 39 ( $N = 954$ ). Data were collected via an adapted questionnaire on the TPB constructs: attitudes towards blood donation, subjective norms of peers and loved ones, perceived control of behavior, and intention to donate blood. Univariate, bivariate and multivariate analysis were employed to explore the associations of these constructs. Primary findings revealed that the intention to donate blood regularly was positively associated with social norms. Secondary findings suggested that a hierarchical multiple regression analysis provided strong support for the role of social media apps as a major determinant of motivations for donating blood, with TPB constructs accounting for 34% of the variance. Tertiary findings from this study derived Cronbach's  $\alpha = 0.555$ , indicating a poor level of internal consistency. The generalizability of the results in this study could be verified by increasing the number of questions in each construct and conducting future studies at larger universities and blood centers.

**Keywords:** Blood donation; Intentions; Motivation; Beliefs; Pilot study; Theory of Planned Behavior

### 1 Introduction

Since 2020, the COVID-19 pandemic has contributed to a high-stress demand for blood. In January 2022, the American Red Cross declared that the United States of America was facing a blood crisis due to a shortage in blood donations [1]. Major events such as a pandemic resulted in the need for increased blood supplies and blood products [2]. These increased needs place stress on medical systems, patients, and the public because the main supplier of blood product donors have decreased their blood donations. A decline in blood donations is not attributed to the COVID-19 pandemic only. Before the pandemic, there was a decline in people's willingness to donate blood. Various factors such as declining birth rates, an aging population, and increasing life expectancy [3], coupled with a decreasing number of donors [4, 5] are leading to a potential blood supply crisis. Additionally, during the pandemic, hospital systems and other healthcare faculties experienced a significant increase in demand for blood products including plasma, whole blood, and other blood products. The impact of the COVID-19 pandemic, an aging population, and a declining number of blood donors should be explored. The pool of eligible blood donors in the United States has risen from 111 million in 2007 to 204.9 million in 2018, an increase of nearly 85 percent [6]. Experts speculate that the increase is due to people aging into eligibility requirements and losing exclusion restrictions [7]. However, even with this increase, only 3 percent of the eligible population donate blood yearly [7]. A declining donation rate and an increase in the consumption of blood components require novel approaches on both sides of the blood supply chain [8]. Preliminary data from a large, cross-sectional 2016 National Health Interview Survey study in the U.S. reports that

the 18–24 age group had the lowest percentage of past-year blood donations, with donations more common among males than females [9]. There is increasing evidence that older donors would like to continue donating blood into their eighth decade and perhaps beyond [10]. However, this would not be a reliable option due to the donors' ages and their possible increase usage of blood products. There is an urgent need to successfully recruit a younger generation (ages 18–39) of sustainable blood donors to complement and eventually replace the aging WWII and baby boomer generations (ages 60+) of donors.

### 1.1 The Importance of Gaining New Donors

Best practices for the procurement and efficient maintenance of blood donations include increasing donations from existing donors, increasing the number of people who donate, and using an agile sales and operations planning approach to ensure blood collections and production adapt to changing demand patterns [11, 12]. Beckman et al. [13] suggested continuing to recruit new donors at a rate sufficient to maintain the donor pool at current demand levels, targeting donor recruitment toward blood types experiencing shortages, and implementing control measures for managing blood supply surpluses. Czeizler and Garbarino [14] suggested donation appeals are best served by framing the appeal to match the time frame of the donation decision. Pereira et al. [15] reported that those who have donated blood previously are more likely to donate again during blood drive calls than those who had not donated previously. In a study of examining different communication methods and their effect on blood donors, Miah [16] discovered that SMS (text messaging) was the best communication tool for reaching potential blood donors, yielding the highest turn out rate. However, in a larger study conducted among blood donors in six countries, Sundermann et al. [17] noted that although donors in two countries (the U.K. and Australia) preferred contact via SMS, blood donors from all six countries prefer contact by email. Best recruitment practices include appealing to donors via adapting to changing demand patterns, timing donor calls, and reaching the donor population through social media.

### 1.2 Using the Theory of Planned Behavior as a Framework

The health care system and blood donation collection agencies need to increase donation rates and need assistance with identifying factors most likely to predict potential donors' willingness to donate. Models and theories have been adopted to explain key attributes in the donation process. The potential intention to give blood has been modeled using the Theory of Planned Behavior (TPB) [18, 19]. The largest predictor of behavior change is the intention to perform the behavior [20, 21], which positions TPB as an adequate and widely used theoretical framework for explaining behavior and behavior change.

TPB proposes that one's intention is determined by attitude (will the individual's interpretation of the behavior lead to valued outcomes), subjective norm (perceived social acceptance of either acting or not acting on the intended behavior), and perceived behavioral control (an individual's perception of whether achieving the goal is feasible). The use of the TPB model in understanding blood donation intentions has been studied with various adult populations. Armitage and Conner [22] contend the TPB model explained 68% of the variation in blood donation intentions, whereas the TPB model used by Lemmens et al. [23] accounted for only 31%. These findings have encouraged our research to further investigate the variation of intentions among a younger population. Similarly, another study reported that normative, conceptual, and behavioral beliefs accounted for 31% of the variance in blood donors' tendency [24]. The TPB model explained 49% of the variance in blood donation intentions, with significant predictors including direct perceived behavioral control, direct subjective norm, direct attitude, and past behavior of blood donation [25]. Additionally, while self-efficacy has been reported as a strong correlate of blood donation intentions, other studies reported affective attitude, subjective norm, descriptive norm, and moral norm as important correlates [26–28]. These findings suggest that further studies are needed to identify the strongest correlates for blood donation among a younger population.

In another extended TPB study, moral norm, self-identity, and in-group altruism (i.e., close friends/family and ethnic group affinity) were significant factors in predicting blood and organ donation intentions. An augmented TPB study using structural equation modeling reported a direct path from blood donation intention to behavior and indirect paths to behavior through intention for variables such as attitude, self-efficacy, and anticipated regret [29]. Conner et al. [30] reported blood donation intentions, perceived behavioral control, and anticipated positive affective reactions as significant predictors of actual blood donation. Attitude toward screening also contributes significantly to an individual's perception of safety regarding the blood donation process [31]. In a field experiment on blood donations, Stutzer et al. [32] reported that an 'active decision' mediation substantially increases blood donations among participants who had not previously considered the importance of donating blood, while the donation behavior of those who had already considered its importance remained unchanged. In another health related TPB study, the researchers concluded that positive attitudes toward care and higher perceived behavioral control were significant predictors of a stronger intention to seek mental health services [33]. The TPB model and its variants have shown mixed success in predicting donor behavior.

Due to the mixed findings, other factors that could motivate blood donation should be explored in connection with the TPB model. Goette and Stutzer [34] concluded that selective incentives, such as offering a free lottery ticket and prosocial motivations may coexist even in domains that rely heavily on people's intrinsic motivation. In a study examining whether financial and non-financial incentives are associated with willingness to donate blood in fifteen European countries, researchers discovered that those who believe financial rewards should be given for blood donation are less likely to donate blood, while those favor non-financial rewards are equally or more likely to donate blood [35]. Mews [36] noted that non-paying blood donation organizations have to offer superior convenience to their donors to compensate for not offering financial incentives. In addition to altruism, extraneous incentives have been widely used to recruit new donors. In terms of the TPB, the model may provide a framework to identify key recruitment methods that will lead to higher intentions to donate blood.

While gaining new donors is key for blood donation, retaining donors is also key. Masser et al. [37] identified five stages in the blood donor career, referred to as (1) initiation, (2) maintenance, (3) habit formation, (4) habit, and (5) formation of the blood donor identity. Research suggests that experiences during the first donation and the early years of a donor's career are critical in the development of regular donors. Retention of new donors should begin from recruitment onwards, because lapsing mostly occurs in first time donors [38], and habit formation usually begins after approximately four donations due to one's perceived changing role from 'blood donor' to 'role identity' [39]. Schreiber et al. [40] reported that the more donors donated in their first year, the more likely they were to become regular donors. Using the TPB to understand blood donation behavior may provide a way to increase retention efforts.

Demonstrating the importance of attitudes, the influence of peers and loved ones, and beliefs on the intentions of people to donate blood are important. Identifying the factors that have the greatest impact on possible donations may inform how recruitment and retention efforts should be framed. While several studies have examined the TPB, there is a need to replicate findings with different populations so that practice can be informed. The objective of this study is to provide further support for constructs of the TPB as great predictors for future blood donation. Our study aims to use the Theory of Planned Behavior as a framework to identify effective ways to recruit and retain a younger donor population. We examined how the various constructs of the TPB can inform usage of mobile apps and social media as a tool for recruitment and retention of blood donors. This preliminary research study is expected to aid in understanding blood donation intentions, motivations, and beliefs among a diverse population at a large public university in the metro-Atlanta area. The outcomes of this research will be used in metro-Atlanta, but this framework can also be used nationally and results in a significant and broad positive societal impact.

## **2 Methodology**

### **2.1 Participants and Procedures**

Our study utilized a cross-sectional web-based Qualtrics<sup>TM</sup> survey conducted at a southeastern university. Participants included students, faculty, staff, as well as their family and friends (18–39 years of age). Online consent was obtained from the participants before responding to the survey questions. Over 1,100 respondents accessed the survey, including those who did not consent. The number of participants was reduced to 950 upon removing those who did not consent and did not complete the Theory of Planned Behavior questions. Based on the Roasoft sample size calculator, a minimum sample size of 381 participants is required to achieve a margin of error of 0.05 and a 95% confidence level. Our sample data of 954 entries are well above this required sample size.

The online survey was distributed through multiple channels, the university's daily electronic newsletter, emails with links to the survey, and LinkedIn groups. The Institutional Review Board (IRB) approved this study. Qualtrics results were exported to SPSS version 28 (Windows) for analysis, and descriptive statistics were calculated and reported.

### **2.2 Measures**

The online Qualtrics<sup>TM</sup> survey used a seven-point Likert scale for nine questions regarding attitudes and intentions, subjective norms, and perceived behavioral control, based on a modified Theory of Planned Behavior (TPB) model. Open-ended questions regarding technology, incentive, and convenience preferences will also be included.

### **2.3 Theory of Planned Behavior Measures**

The Theory of Planned Behavior (TPB) was measured with an 8-item adapted scale based on guidelines provided by Ajzen, 1991. The TPB scale assessed 4 essential features of the TPB. Those features were Attitudes toward blood donation, subjective norms of peers and loved ones, perceived control of behavior, and intention to donate blood. Composite measures were created such that higher scores indicated positive or stronger levels for the feature. The measurement of each feature is explained below.

**1. Attitudes toward blood donation.** Attitudes toward blood donation are a measure of behavioral beliefs that produce a favorable or unfavorable attitude towards donating blood and guide considerations of positive and negative outcomes. Attitudes are defined by direct attitudes towards behavior, behavioral beliefs about the behavior, and

outcome evaluation of the behavior. A composite score was created by adding all three measures. Higher scores indicated positive or stronger levels for the feature. The attitudes construct had a reliability of  $\alpha = 0.100$ .

2. **Subjective norm.** Normative beliefs result in perceived social (or peer) pressure or subjective norm. The subjective norm measure was composed of three items. A composite score was created by adding all three measures. Higher scores indicated positive or stronger levels for the feature. The subjective norms construct had a reliability of  $\alpha = 0.361$ .

3. **Self-efficacy/Perceived control.** Control beliefs produce behavioral control by impacting the performance of the behavior. One item measured perceived self-efficacy/control toward their donorship.

4. **Intention.** The intention is a measure of the extent to which an individual is motivated to donate blood. Intention to donate blood was measured by one item.

Survey questions related to TPB are shown in Table 1. Both the attitudes toward the blood donation construct and the subjective norms of perceived social and peer pressure construct were measured by three different questions each. A composite score was created by adding all three measures. Higher scores indicated positive or stronger levels for the feature. There is one question for perceived control of blood donation behavior and the participant's intention to donate blood.

**Table 1.** Survey questions on the Theory of Planned Behavior (TPB) toward blood donation

Construct	Questions	Answer Type
Attitudes toward blood donation	For me to gain a better understanding of a potential blood crisis in the U.S. is.	7-point Likert scale 1: extremely bad, to 7: extremely good
	For me to not donate blood is.	7-point Likert scale 1: extremely bad, to 7: extremely good
	I am afraid that donating blood can be harmful to my body.	7-point Likert scale 1: strongly disagree, to 7: strongly agree
Subjective norms of peers and loved ones	Most people who are important to me think that I donate blood on a regular basis.	7-point Likert scale 1: strongly disagree, to 7: strongly agree
	Most people with whom I am acquainted donate blood on a regular basis.	7-point Likert scale 1: strongly disagree, to 7: strongly agree
	Most people whose opinions I value would approve of my donating blood on a regular basis.	7-point Likert scale 1: strongly disagree, to 7: strongly agree
Perceived control	For me to donate blood on a regular basis is.	7-point Likert scale, 1: extremely difficult, to 7: extremely easy
Intention to donate blood	I will make an effort to donate blood on a regular basis.	7-point Likert scale, 1: definitely will not, to 7: definitely will

## 2.4 Demographic Measures

The survey also included measures of background factors for blood donation behavior. These factors will be socio-demographic characteristics (i.e., birthplace, age, gender, marital status, level of education, and race) and personality characteristics (i.e., motivation to comply, behavioral beliefs, control beliefs, and normative beliefs). The results of this survey enabled evaluation of the utility of these background measures. For example, which factors are statistically significant? Do the personality and other individual difference measures have high internal consistency? To improve internal consistency, observations in which the survey respondents did not provide consent or had missing values were removed from further analysis. Furthermore, the original TPB survey questions were designed with internal consistency in mind. Hence, some questions used a rating scale of 1 (extremely good) to 7 (extremely bad) while other questions used a rating scale of 1 (strongly disagree) to 7 (strongly agree). In our statistical analysis, only questions 3, 7, and 8 remain as originally designed. The remaining five questions were recoded to ensure that the meaning of each question was aligned within its respective construct.

### 3 Results

#### 3.1 Demographic Characteristics

In this pilot study, 498 (52.2%) are male and 392 (41.1%) are female. Most participants are U.S. born (85.4%), married (49.1%), and White/Caucasian (53.5%). Similarly, over 50% of the participants have an education level of a bachelor's degree or higher. Additional detailed demographic information about the participants can be found in Table 2.

**Table 2.** Demographic characteristics

<b>Demographic Data</b>	<b>N</b>	<b>%</b>
<b>Birthplace</b>		
U.S Born	816	86.0%
Foreign-born	133	14.0%
<b>Biological Sex</b>		
Male	498	52.2%
Female	392	41.1%
Intersex	35	3.7%
Prefer not to answer	23	2.4%
<b>Marital Status</b>		
Married	466	48.8%
Single	427	44.8%
Divorced	37	3.9%
Widow	10	1.0%
Prefer not to answer	6	0.6%
Other	4	0.4%
<b>Education</b>		
Undergraduate degree	318	33.3%
Associate degree	156	16.4%
Trade school diploma	141	14.8%
High School diploma	138	14.5%
Master's degree	125	13.1%
Doctoral degree	37	3.9%
Less than High School diploma	24	2.5%
Prefer not to answer	14	1.5%
<b>Race and Ethnicity</b>		
White/Caucasian	510	53.5%
Black/African American	127	13.3%
American Indian or Alaskan	101	10.6%
Asian	97	10.2%
Hispanic or Latino	54	5.7%
Native Hawaiian or other Pacific Islander	27	2.8%
Other/Multi-Racial	22	2.3%
Prefer not to answer	15	1.6%

In this study, we assessed the perceptions of intentions, motivations, and beliefs related to blood donation within a large university community. A measure of four Theory of Planned Behavior constructs resulted in Cronbach's  $\alpha = 0.555$  and there were several significant relationships among the constructs ( $p \leq 0.01$ ). Participants reported favorable scores for a better understanding of the blood donation crisis in the U.S. ( $M = 4.98$ ,  $SD = 1.59$ ,  $N = 954$ ), for me to not donate blood ( $M = 4.11$ ,  $SD = 1.58$ ,  $N = 951$ ) and disagreement that donating blood can be harmful to one's body ( $M = 4.36$ ,  $SD = 1.78$ ,  $N = 947$ ), all of which influenced attitudes regarding one's intention for donating blood construct. Moreover, participants indicated that most people who are important to them believe they should donate blood ( $M = 4.79$ ,  $SD = 1.37$ ,  $N = 952$ ) and that most people they are acquainted with think they should donate blood regularly ( $M = 4.34$ ,  $SD = 1.63$ ,  $N = 948$ ), which influenced the subjective norms construct. Descriptive data for the scales used are displayed in Table 3. Zero-order correlations between selected variables are also displayed in Table 3. From this finding, it is evident that while all variables significantly correlated with intention, the strongest relationship was with subjective norms. Social media use, however, demonstrated a strong correlation with the intention variable.



**Table 3.** Means, SD and zero-order correlations between selected variables

Variables	M	SD	1	2	3	4	5
1. Intention	5.02	1.50	—				
2. Attitude	4.48	0.92	0.22 <sup>c</sup>	—			
3. Subjective norm	4.56	1.03	0.52 <sup>c</sup>	0.22 <sup>c</sup>	—		
4. Perceived control	4.06	1.65	0.34 <sup>c</sup>	0.15 <sup>c</sup>	0.40	—	
5. Social Media Use	2.94	1.98	-0.06 <sup>c</sup>	0.09 <sup>b</sup>	-0.05	-0.08 <sup>b</sup>	—
6. Mobile App Use	2.85	1.59	-0.49 <sup>c</sup>	-0.26 <sup>c</sup>	-0.46 <sup>c</sup>	0.32	-0.043

Note: <sup>a</sup>  $p < 0.05$ ; <sup>b</sup>  $p < 0.01$ ; <sup>c</sup>  $p < 0.001$ .

Table 4 shows Bivariate correlation coefficients to assess the relationship between a theory of planned behavior constructs and their significant p-values ( $p \leq 0.01$ ).

There was a moderate, positive correlation between Intention to donate blood, Subjective Norms, and Normative beliefs ( $r = 0.519$ ,  $N = 935$ ). The intention to donate blood was positively associated with both subjective norms (i.e., approval by those in one's social network) and normative beliefs (i.e., regular blood donors among one's social network). The intention to donate blood was moderately correlated with perceived control ( $r = 0.335$ ,  $N = 941$ ) and attitudes ( $r = 0.219$ ,  $N = 935$ ). A moderately strong positive relationship was found between most people whose opinions are valued and donate blood regularly, and one's perceived control of donating blood on a regular basis ( $r = 0.404$ ,  $N = 940$ ). All relationships were significant ( $p \leq 0.01$ ). Surprisingly, there was a moderately negative association between intention to donate blood and the likelihood of using a blood donation app ( $r = -0.496$ ,  $N = 937$ ). The relationships were significant ( $p \leq 0.01$ ). Similarly, the correlation of using a blood donation app was negatively associated with increased subjective norms ( $r = -0.458$ ,  $N = 937$ ) and increased perceived control to donate blood ( $r = -0.316$ ,  $N = 943$ ).

**Table 4.** Bivariate correlation of TPB constructs vs. Intentions and attitudes for donating blood

		Intention	Attitudes	Subjective Norms	Perceived Control
<b>Intention</b>	Pearson Correlation	1			
	N	943			
<b>Attitudes</b>	Pearson Correlation	0.219	1		
	N	935	944		
<b>Subjective Norms</b>	Pearson Correlation	0.519	0.229	1	
	N	935	935	943	
<b>Perceived Control</b>	Pearson Correlation	0.335	0.148	0.404	1
	N	941	941	940	951
<b>Mobile app use for blood donations</b>	Pearson Correlation	-0.496	-0.251	-0.458	-0.316
	N	937	938	937	943

**Table 5.** ANOVA table of hierarchical regression steps

ANOVA <sup>a</sup>					
Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	52.832	3	17.611	7.070 < 0.001 <sup>b</sup>
	Residual	2256.607	906	2.491	
	Total	2309.438	909		
2	Regression	89.748	5	17.950	7.310 < 0.001 <sup>c</sup>
	Residual	2219.690	904	2.455	
	Total	2309.438	909		
3	Regression	90.637	6	15.106	6.148 < 0.001 <sup>d</sup>
	Residual	2218.801	903	2.457	
	Total	2309.438	909		
4	Regression	772.878	10	77.288	45.219 < 0.001 <sup>e</sup>
	Residual	1536.561	899	1.709	
	Total	2309.438	909		

<sup>a</sup> Dependent Variable: Use of mobile app for blood donation

<sup>b</sup> Predictors: (Constant), Marital status, Birthplace, Biological sex at birth

<sup>c</sup> Predictors: (Constant), Marital status, Birthplace, Biological sex at birth, Level of education, Race and/or ethnicity

<sup>d</sup> Predictors: (Constant), Marital status, Birthplace, Biological sex at birth, Level of education, Race and/or ethnicity, Social Media Use

<sup>e</sup> Predictors: (Constant), Marital status, Birthplace, Biological sex at birth, Level of education, Race and/or ethnicity, Social Media Use, Perceived Control, Attitudes towards blood donation behavior, Intention, Subjective Norms

### 3.2 Predictions on Intentions to Use a Mobile App for Blood Donations

Further exploration of the relative importance of the prediction of intention on using a Mobile App to encourage donation, a hierarchical regression analysis was conducted, with Mobile App usage regressed on key variables. Demographic variables in Step 1 (marital status, biological sex, and birthplace), educational level and race/ethnicity were entered in Step 2, Social Media Use in Step 3 and Perceived control, Attitudes, and Intention in Step 4. From these results, there is evidence that TPB is a reasonable model for predicting the intention to donate blood. Indeed, together the independent variables have produced a multiple correlation of  $r = 0.578$ , accounting for some 34% of the variance in installing a mobile app to track blood donation contributions [ $F(10, 899) = 45.22, p < 0.01$ ]. Demographic variables accounted for 2% of the variance [ $F(3, 906) = 7.07, p < 0.001$ ] and total social media use [ $F(6, 903) = 6.148, p < 0.001$ ], as shown in Table 5.

## 4 Discussion

The primary purpose of this pilot study was to learn intentions, motivations, and beliefs about blood donation behavior among the younger generation aged 18–39. This targeted demographic could eventually supplant the aging baby boomer generation of sustainable blood donors in the United States. Identifying motivations, beliefs, and intentions about blood donation behavior of this younger generation is crucial in addressing how to recruit and sustain the next generation of regular blood donors to maintain the needs of the nation's daily blood supply levels. We were also interested in learning participant outcomes of the eight-item Qualtrics<sup>TM</sup> survey, as measured by their respective means and standard deviations. This provided insights pertaining to each question as well as two of the four TPB constructs: namely, attitudes and subjective norms.

The present findings in this study support the view that the TPB is a useful predictor of blood donation behavior. These results have important implications for both theory and practice. From a theoretical perspective, the study highlights the importance of intention within the TPB. Through the lens of TPB, this study provides a better understanding of the beliefs held by people aged 18–39 regarding blood donation and the factors that may motivate them to donate. For example, subjective norms (i.e., valued opinions of people in which potential donors are acquainted) are positively associated with one's intention to donate blood on a regular basis ( $r = 0.519, N = 935$ ) and influence a potential donor's perceived control of donating blood regularly ( $r = 0.404, N = 940$ ).

Moreover, regarding the use of social media apps to aid in blood donations, a moderately strong positive multiple correlation ( $r = 0.578$ ) exists among the variables: marital status, birthplace, biological sex at birth, education level, race and/or ethnicity, and social media use.

Additionally, employing a 4-step hierarchical regression analysis resulted in a significant model between installing a mobile app to track blood donations (dependent variable) with independent variables: marital status, birthplace, biological sex at birth, level of education, race and/or ethnicity, and total social media use ( $p < 0.001$ ).

### Limitations

We acknowledge the following research limitations: (1) The present Qualtrics<sup>TM</sup> survey consists of 21 questions. Eight of those questions pertain to the Theory of Planned Behavior constructs: attitudes towards blood donations, subjective norms of peers and close friends, family, and ethnic group affinity, perceived control of behavior, and intention to donate blood. Whereas three questions pertain to the attitudes and subjective norms constructs, only one question pertains to the perceived control and intention constructs. This severely hampered our Cronbach's alpha measure of internal consistency. Increasing the number of questions within each construct could improve both the inter-relatedness and correlation between items; (2) This pilot study was conducted at only one large public university and, thus, the results cannot be generalized. However, this study does provide a foundation for future studies that should include additional questions for each TPB construct so that a better measure of Cronbach's  $\alpha$  can be assessed. Additionally, conducting a similar study at other institutions, which could include blood donation centers, would lead to a broader societal impact.

## 5 Conclusions

The pilot study has confirmed the effect of the TPB framework for blood donation, suggesting several practical recommendations. To recruit younger donors, agencies should examine the impact of peers and family involvement for blood donations. Agencies should also employ techniques designed to leverage social media and app usage on regular blood donation intentions. Clearly, further work is needed to determine whether these findings can be replicated in a larger sample of the general population, and to identify other possible factors that affect blood donation. Finally, further research is needed to investigate whether the applied interventions effectively recruit and retain more regular blood donors.

### Author Contributions

Conceptualization, A.M.U. and R.S.K.; methodology, A.M.U.; software, A.M.U.; validation, R.S.K., L.L. and M.V.; formal analysis, A.M.U., R.S.K. and Z.S.; investigation, A.M.U., B.B. and O.B.; resources, A.M.U.; data curation,

A.M.U.; writing—original draft preparation, A.M.U.; writing—review and editing, R.S.K. and Z.S.; visualization, A.M.U. and R.S.K.; supervision, R.S.K., L.L. and M.V.; project administration, A.M.U. All authors have read and agreed to the published version of the manuscript.

### Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

### Data Availability

The data used to support the research findings are available from the corresponding author upon request.

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### Conflicts of Interest

The authors declare no conflict of interest.

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