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ABSTRACT

With a growing need for blood and blood products, managers of blood collection agencies are interested in increasing donation rates. A better understanding of how donors are different from the general public might inform decisions on how to promote to make non-donors more like donors. A sample of 74 student blood donors was surveyed at two university blood donor clinics about their attitudes and beliefs about blood donation. A convenience sample of 134 respondents in a university student population was also surveyed for comparison. The latter was later split by level of commitment to blood donation. Differences among these three groups were tested. Applications of these finding are suggested.

INTRODUCTION

With the spread of AIDS and other diseases, increasing frequency of organ transplants and advancement in the treatment of the chronically ill and aged, the need for blood has continued to increase at a faster rate than its supply (Hader, 2006), despite predictions that development of artificial blood would solve the problem of shortages by now (Minerd 1999). Despite the large and growing demand for blood, typically only about 3% of the population that is qualified to donate, does so (Reid and Wood, 2007). In addition, donation rate declines as donors age; new donors must be found to replace those who drop out. To address this shortfall, some have advocated a market segmentation approach to recruiting (eg. Allen and Maddox, 1990).

Several approaches could be taken to stimulate blood donation. Nonis et. al. (1996) identified two possible strategies for targeting blood donation efforts. Their extensive strategy would target everyone in a population. Their intensive approach, however, would target those identified with the characteristics of potential donors. They suggested that the intensive approach would be more efficient and less wasteful of resources. It would thus benefit the blood collection agencies to be able to identify those who are more likely to donate and to understand what motivates them. These groups who are likely to have similar patterns of blood donation

behavior could then be targeted with more targeted persuasive messages and other promotional activities and stimulated to donate.

Nonis et.al.(1996) observed that "researchers have found the segments of the market of potential blood donors and non-donors to be reasonably distinct and different in terms of identifiable characteristics and behavior patterns and suggest targeting specific strategies to particular blood donor segments".

The work done to identify the bases for the segmentation, however, has produced mixed results. For example, males have been generally found to be more likely to donate than females (Andaleeb and Basu 1995, Tucker 1987, Nonis et. al. 1996) but in their study of intention to donate, Reid and Wood (2008) found the opposite.

Some of the variables which have been used to segment donor behaviour are not particularly useful for a student population. For example Pindyk et. al. (1987) found that the willingness to donate declines with age but that this decline occurs primarily after 50 years of age.

A number of factors have been identified that would apply to the student population however.

Altruism.

Values and behaviors associated with altruism might be thought to be an obvious predictor of donation behavior. In their review of the literature, Andaleeb and Basu (1995) noted that altruism was found to be associated with donation by some (Burnett 1982) and not others (Condie, Warner and Gillman 1976). More recent work supports the former view (Tucker 1987, Boenigk, Liepnitz and Scherhag, 2011).

Trust and Fears.

Concern about risk associated with donation and the need for trust in the blood collecting organization was seen to be a factor in the work by Andaleeb and Basu (1995) who found that risk-averse people were less likely to donate blood. Nonis et. al. (1996) studied risk aversion and did not find this, however.

Andaleeb and Basu (1995) found that increasing trust in the blood collection agency and reducing the perception of specific health risks increased the probability of donation. This finding was not supported by Nonis et. al. (1996) however.

European studies (reported in Leigh, Bist and Alexe, 2007) found that the chief fear associated with blood donation was that of contracting HIV during the process but that this has expanded to include other diseases recently.

Fears other than those related to personal health have been identified as well. These have included fears of unpleasant sensations associated with drawing blood, fear of needles, especially

dirty needles, the sight of blood, and the screening process (Leigh, Bist and Alexe, 2007, Ried and Wood 2008, Tscheulin and Lindenmeier, 2005).

Convenience.

Tscheulin and Lindenmeier (2005) found personal inconvenience to the donor, hours of operation of the clinics, and length of waiting times to be factors decreasing the likelihood of donation.

Donors are thus expected to have lower level perceived risks, higher levels of recognitions of needs for blood, higher levels of altruism, higher enjoyment of the social aspect of donation, lower levels of fear associated with donation and lower perceptions of inconvenience associated with donation.

There has been a great deal of use made in the social sciences of student samples. Of course, for academic research, they are more easily accessible than other kinds of respondents but they are of interest in the case of blood donation for another, more practical, reason. Piliavin, Callero and Evans (1985) examined the formation of the blood donor habit in students and found that the "by their second or third donation, they (donors) appear to be developing a sense of personal obligation to give". As young adults, university students are thus forming habits which may carry on through life. This makes them an important target for promotional efforts of the blood collection agencies as this is a very good time to recruit life-long donors. Our study thus focuses on university students.

METHOD

A paper, self-completed questionnaire was developed from the factors found in the literature. Sixteen items covered beliefs and personal thoughts about blood donation. There were two categories of beliefs including those related to risk (2 items) and needs (3 items). The "Personal Thoughts" section included those related to altruism (2 items), social enjoyment (1 item), fear (6 items) and convenience (2 items)(see Table 1 for the items). All items used a 7 point scale ranging from do not agree to strongly agree for the belief items and not important to very important for the Personal Thoughts items. Items about willingness to donate blood under certain conditions as well as classification items and personal values items were also included.

The questionnaires were administered to two groups of respondents. The first group consisted of participants of two blood donor clinics at two Eastern Canadian Universities. The second group of respondents was from the general population of students of one of these schools.

RESULTS

Questionnaires were completed by 208 respondents. Seventy-four were from the blood donor clinics and included a small number who were accompanying donors but were unable to donate themselves.

The sample of 134 from the general student population was obtained from Commerce and Arts classes. This general population sample was 52% female, compared to 70% of the blood donor sample. This difference was significant ($X^2 = 6.392$, p=.011) and supports the observation by Reid and Wood (2008).

Considering the difference in constitution between the donor and non-donor groups, separate t-tests were done on the dependent variables grouped by gender. Significant differences were noted, especially on the altruism, need and risk items with females scoring higher than males (p = <.05). This raised concerns about the equivalency of the two groups in comparison.

Also, international students made-up a significant proportion of the student body at the school where the general population was sampled. International students represented 28% of this sample while the sample of donors from the clinics consisted of only 9.5% international students. T-tests were conducted on the dependent variables grouped by student nationality and international students were seen to be lower on risk and need items and higher on the fear items, which were reverse scored as they were in terms of level of comfort, and lower on the infection and illness items (p = <.05).

With these results in mind then, donors were compared to the general student sample using analysis of covariance with gender and respondent nationality as covariates. These results can be seen in Table 1.

From these results, it can be seen that blood donors are significantly different from non-donors in their attitudes and beliefs in all the items studied at p<.1 and on most items at p<.05 and that all of the differences are in the expected directions. Any attempt to exhaustively reach all the public with messages to convert them to donors would have a very wide choice of themes from which to choose. Such a scattered approach could potentially drain available resources in promotion.

		Means Donors/General	p-value
Table 1 **Comparison of Donors to General Student Sample**			
Beliefs			
Risk	Blood Donation is safe.	6.58 / 5.49	.000
	Blood donors are thoroughly screened.	6.34 / 5.14	.000
Need	Donated blood is used for various medical reasons.	6.70 / 6.21	.006
	The need for blood will always remain high.	6.85 / 6.18	.000
	There is a critical need to find more blood donors.	6.72 / 6.05	.000
Personal Thoughts			
Altruism	It is the right thing to do.	6.57 / 5.68	.000
	I feel I have a social responsibility to donate blood.	5.58 / 4.75	.014
	I enjoy helping others.	6.57 / 5.88	.000
Social	I enjoy the social aspect of donating.	4.88 / 4.24	.020
Fear	I am comfortable with medical clinics.	6.04 / 4.95	.000
	I am comfortable with hospitals.	5.78 / 4.67	.000
	I am comfortable with medical staff.	6.07 / 5.03	.000
	I do not mind needles.	5.36 / 4.57	.023
	I am concerned that I could risk an infection or disease if I donate blood.	2.82 / 3.92	.009
	I am concerned that the blood test may reveal an unknown illness.	2.85 / 3.59	.090
Convenience	I find the locations of blood donor clinics inconvenient.	3.68 / 4.29	.065
	I do not think I have enough time to give blood.	3.12 / 3.77	.091

According to Reid and Wood (2007), intention to behave is an important motivator in behavior. One item in the current questionnaire was "I would be willing to donate blood if I were provided with information on the safe aspects of donating". While the mean rating was high (5.92 on a 7 point scale), it was assumed that those scoring 7 were more likely to donate while those scoring 6 or below were less so. This high-likelihood group accounted for 39% of the total sample of general respondents. A comparison of these two groups on the same items as in Table 1 yielded the results in Table 2. Again, the two groups were significantly different on most items.

Table 2
Comparison of High to Low-Likelihood Potential Donors

		Means – Low /High Likelihood	p-value
Beliefs			
Risk	Blood Donation is safe.	5.13 / 6.04	.000
	Blood donors are thoroughly screened.	4.93 / 5.48	.013
Need	Donated blood is used for various medical reasons.	6.06 / 6.44	.023
	The need for blood will always remain high.	5.87 / 6.68	.000
	There is a critical need to find more blood donors.	5.77 / 6.48	.001
Personal Thoughts			
Altruism	It is the right thing to do.	5.24 / 6.37	.000
	I feel I have a social responsibility to donate blood.	4.23 / 5.58	.000
	I enjoy helping others.	5.73 / 6.13	.111
Social	I enjoy the social aspect of donating.	3.87 / 4.81	.016
Fear	I am comfortable with medical clinics.	4.66 / 5.39	.012
	I am comfortable with hospitals.	4.37 / 5.13	.020
	I am comfortable with medical staff.	4.73 / 5.48	.006
	I do not mind needles.	4.26 / 5.04	.030
	I am concerned that I could risk an infection or disease if I donate blood.	4.06 / 3.69	ns
	I am concerned that the blood test may reveal an unknown illness.	3.58 / 3.59	ns
Convenience	I find the locations of blood donor clinics inconvenient.	4.38 / 4.15	ns
	I do not think I have enough time to give blood.	4.20 / 3.11	.001
ns – not significant, p > .1			

Perhaps a more efficient approach to stimulating blood donation, however, might be to target the specific group which is already predisposed to donate and see how they differ from the group that actually did donate. The result of this comparison is shown in Table 3.

High likelihood potential donors are apparently much more like actual donors with many of the items showing non-significant differences between the groups.

Table 3
Comparison of Actual Donors to High-Likelihood Potential Donors

		Means Donors / Hi Likelihood Potential Donors	p-value
Beliefs			
Risk	Blood Donation is safe.	6.58 / 6.04	.079
	Blood donors are thoroughly screened.	6.34 / 5.49	.002
Need	Donated blood is used for various medical reasons.	6.85 / 6.67	ns
	The need for blood will always remain high.	6.85 / 6.67	ns
	There is a critical need to find more blood donors.	6.72 / 6.49	ns
Personal Thoughts			
Altruism	It is the right thing to do.	6.57 / 6.38	ns
	I feel I have a social responsibility to donate blood.	5.58 / 5.58	ns
	I enjoy helping others.	6.57 / 6.13	.035
Social	I enjoy the social aspect of donating.	4.88 / 4.88	ns
Fear	I am comfortable with medical clinics.	6.04 / 5.38	.062
	I am comfortable with hospitals.	5.78 / 5.11	.097
	I am comfortable with medical staff.	6.07 / 5.47	.035
	I do not mind needles.	5.36 / 5.00	ns
	I am concerned that I could risk an infection or disease if I donate blood.	2.82 / 3.73	ns
	I am concerned that the blood test may reveal an unknown illness.	2.85 / 3.62	ns
Convenience	I find the locations of blood donor clinics inconvenient.	3.68 / 4.21	ns
	I do not think I have enough time to give blood.	3.12 / 3.15	ns
ns – not significant, p > .1			

DISCUSSION

Several different strategies could be taken to attempt to stimulate donations. In any attempt to move non-donors in general to be more like donors, emphasis would be on looking at the differences between these two groups. These differences were seen in Table 1 and showed differences in all items at $\alpha = .10$. This leaves little benefit to be gained from attempting to refine one's approach to convincing potential donors to act when any topic used will make some difference.

From Table 2, comparing low- to high-likelihood potential donors, it was seen that non-significant differences (at $\alpha= .10$) were only seen in the items concerning helping others, risk of infection (although this contradicts the very significant differences noted under the items concerning beliefs about the safety of blood donation) and convenience of location. Attempts to increase the commitment of the general potential donor pool should not focus on these items.

If, however, one wanted to convert non-donors to donors, one would do well to focus on those already predisposed to donating, the high-likelihood potential donors and convincing them to take action. High-likelihood potential donors were seen to be much more like actual donors than they were to low-likelihood potential donors. From Table 3 it can be seen that even at $\alpha= .10$, there is no significant difference between the groups on eleven of the items. The items with the most significant p-values had to do with the risks of blood donation, the desire to help others and fears associated with donation although, curiously, not with needles. More specifically, the items concerning the safety of blood donation and those involving concerns about infection showed the most significant differences between the groups. High-likelihood potential donors are more concerned with the safety of the blood system and the risk of infection than were actual donors. A manager wanting to make high-likelihood potential donors more like real donors should concentrate on the difference between the two groups. Communications focussing on these topics and information to allay fears about the risks of donation, steps to make clinics less threatening and advertising these steps and perhaps stress the good feeling associated with helping others all would likely be effective in converting likely donors to actual donors.

Efforts stressing the right thing to do, social aspects of donating, and convenience would possibly be effective in motivating all groups of potential donors but would likely be less effective in converting from potential to actual donor as the two groups are not significantly different on these dimensions.

CONCLUSION

Initial comparison of general student sample to the sample at the blood donor clinic showed them to be, on average, very different in their beliefs and thoughts about blood donation and associated issues.

Taking an approach of targeting those who are most likely to donate with the idea that they are likely a fertile, target market, revealed that this group is much more similar to that of actual donors. However, there were some still significant differences between the two groups. Risks related to blood donation were an important difference between the groups. Enjoyment in helping others and fear and discomfort of actually donating were also important.

A blood agency wishing to convert high-likelihood potential donors to actual donors would do well to concentrate on these topics in their promotion and to avoid other altruistic appeals, education about the need for blood or messages stressing convenience. Emphasis could be

placed on educating on the real risks of donating, providing feedback from those who were helped by receiving the products of donations and by making the clinic a comforting and welcoming place.

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