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Are different motivations and social capital score associated with return behavior among Brazilian voluntary non-remunerated blood donors?

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Abstract

Background: We examined the association between social capital score, motivator factors, demographic and donation characteristics, with donor return at three Brazilian blood centers in Recife, São Paulo and Belo Horizonte.

Material and Methods: 5974 donors were interviewed about motivation factors to donate and cognitive and structural social capital just before an effective donation in three Brazilians blood centers through 2009. We assessed the return to a new donation within two years for each of these donors. Demographic and donation characteristics, motivators and scores of social capital and their association with donoŕs returned were assessed.

Results: Overall 3123 (52.3%) of the study subjects returned for a blood donation at least once. Predictors of donor's return were male gender (AOR=1.6, 1.3–1.9 for replacement, and AOR=1.3, 1.2–1.6 for community donors), previous donation (AOR=2.7, 2.3–3.3, for replacement, and AOR=2.9, 2.5–3.5, for community donors) and high altruism (AOR=1.3, 1.1–1.7, for replacement, and AOR=1.2, 1.0–1.5, for community donors). Altruism was the only motivator associated with return behavior Donors from Recife and São Paulo were more likely to return for replacement and/or for community donations than donors from Belo Horizonte. There was no association between capital scores and donor return behavior.

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Conclusion: The likelihood to return for a subsequent blood donation is dependent upon characteristics of individua donors and also varies in different regions of Brazil. However, social capital was not associated with the likelihood of return behavior. A better understanding of altruistic categories and appeals may help to improve donor recruitment and retention.

Keywords

altruism; social values; education; blood donors; motivation; Brazil/epidemiology

INTRODUCTION

The World Health Nations blood policy states that providing safe and adequate blood should be an integral part of every country's national health care policy and infrastructure.[1] Every year, more than a hundred million blood donations are collected and transfused worldwide, but this level is insufficient. Statistics show that blood donations have not kept pace with the increased demand for blood transfusion.[2]

Recruiting and transforming the first time donor into a frequent donor is a common challenge for any blood center.[3] This change in donor category can lead to a safer and more reliable blood supply.[4] The likelihood of donor return is multifactorial; altruism, coupled with a convenient and accessible place to donate plus a good donation experience have been reported as leading factors for a blood donoŕs return.[5–7]

An appreciation of the multiple factors associated with a decision to donate blood is crucial for maintenance of an effective blood donation program. An awareness of donors' diverse motivating factors can be an important component of a marketing strategy to increase the effectiveness of blood donor recruitment, as some prospective donors are more susceptible to campaigns highlighting altruism behavior, direct appeal or even self-interest. Although blood donation campaigns appear to be made primarily for altruistic reasons and in response to direct appeals for blood[8], self-interest appeals, as free cholesterol testing, for example, have already been tested to motivate blood donors.[9]More appealing campaigns targeting specific motivations may increase the number of donations, retain blood donors and maintain a safe blood supply.[10]

The social capital score is also associated with blood donation. Social capital is a combination of economic and cultural variables, succinctly defined as "trust, norms, and a network of relationships that facilitate people's cooperation for mutual benefit." It can be divided into two types: cognitive and structural. Cognitive social capital is defined as social support, trust, and cooperation that guide individual and community behavior. Structural social capital is related to the individual's participation in Institutions, community associations, and the degree of their connection.[11]An association between social capital and donor behavior has previously been reported. The Australian Red Cross Blood Service and The School of Government at the University of Tasmania investigated the relationship between blood donation and levels of social capital in Australia. They found that high levels of social capital are related to the practice of blood donation.[12] In Brazil, The Retrovirus Epidemiology Donor Study-II assessed the relationship between social capital and test-

seeking behavior among blood donors and found that test-seekers appeared to belong to strong social networks.[13]

Although it is intuitive that more highly motivated donors and those with higher social capital are most likely to return for a subsequent donation, this correlation has not been thoroughly investigated. The primary aim of this study is to evaluate the association between motivation factors and social capital and return behavior during a 2-year follow-up among blood donors in three Brazilian blood centers. Additionally, we examine the impact of demographic characteristics, blood center location, type of donation and donations status on donors' return behavior.

METHODS

Using the international REDS-II donation data, we conducted a 2-year prospective follow-up cohort study to evaluate the association of motivation factors and social capital with the rate of blood donorś return in three Brazilian public blood centers from 2009 to 2011. This cohort was composed of a consecutive sample of 7,635 prospective donors, aged 18 to 65 years-old who presented to donate whole blood at Fundação Pró-Sangue, in the city of São Paulo, Hemominas in Belo Horizonte, and Hemope in Recife, from October 15 through November 20, 2009. Participants included 5,974 prospective voluntary non-remunerated donors who were interviewed about motivation factors for donation and social capital just prior to an effective donation at the blood center of the three centers in 2009.

Participants completed a self-administered questionnaire on demographics (sex, age, educational level, monthly income, and marital status), donation type (community vs. replacement), donation status (first-time vs. repeat), cognitive and structural social capital, and motivations to donate (altruism, self-interest and response to direct appeal). Enrollment was determined before the donor screening process. Only candidates who donated after the interview were included in the follow-up. Altruism, self-interest, and response to directed appeal were measured by a group of questions previously described by Gonçalez et al. [10]Altruism was measured by a group of four questions regarding prosocial attitudes: "To anonymously help someone else who needs blood"; "I think that it is important to give blood"; "I think that I am doing something important for society"; and "Blood banks always need blood donors and so donating is the right thing to do." Measures of self-interest were based on seven questions related to financial incentive ("Someone offered me money for donating"), perceived health benefits ("I heard that blood donation is good for my health"), time off work("I wanted to get off the work today"), indirect reciprocity("I may need blood myself someday"), health check ("I like to know about my health and blood donation is a good way to find out"). Response to direct appeal was measured by four questions associated with marketing communications such as direct marketing ("I received a telephone call or letter from the blood bank asking me to donate" and "My blood type is in high demand"), advertising ("In response to a campaign on TV or radio"), and personal direct request ("To help a friend or relative who is sick or needs blood").Social capital was assessed by a group of four structural and 14 cognitive questions according to Harpham et al. [14] (see appendix).

For each donor, we assessed their return to provide a new blood donation in a two-year period. The three blood centers collect almost 8% of all donated blood per year in Brazil. The blood center of Recife (Hemope) is located in the northeast of Brazil, while the São Paulo (Fundação Pró-Sangue) and Belo Horizonte (Hemominas) blood centers are located in the southeast of the country.

According to Brazilian blood bank regulations[15] males are allowed to donate blood four times a year at an interval of 60 days between each donation, while females are allowed to donate three times a year with an interval of 90 days between every two donations. The number of donors who returned in the 2-year follow-up period was calculated.

The study was approved by the Ethics Committee of Hospital da Clínicas da Faculdade de Medicina da Universidade de São Paulo, the ethics review board for the project. All subjects provided written informed consent.

Statistical analysis

We compared the return rates among all participants. For continuous variables mean and median were calculated. Ordinal variables were calculated as percentages. Chi-square analysis was used to evaluate differences between groups. We utilized three logistic regression models to evaluate significant predictors of blood donors' return. The first model analyzed all type of donors and in the second and third models we separated by type of donors. A p-value < 0.05 was defined as significant. All variables that yielded a p-value <0.20 were included in the multivariate analyses model. Crude odds ratio (OR) and adjusted odds ratio (AOR) (which take into account the effect due to all the additional variables included in the analyzes) were used to evaluate the likelihood of return according to the variable measured in the bivariate and multivariate analyses

RESULTS

The original study population consisted of 7,635 prospective blood donors 5,974 (78.2%) of whom were approved for blood donation and included in the study. Figure 1 shows that more than half (52.3%) of the study population returned at least once for a new donation during the 2-year follow-up.

Table 1 shows the donors' demographic variables, donation characteristics and levels of social capital. Among the blood centers, São Paulo had the highest percentage of return (59.5%) and Belo Horizonte the lowest (43.1%) ($p<0.001$). A higher return rate was associated with male gender (56% of males vs. 44.9% of females, $p<0.0001$), older age (58.5% ≥40 years-old vs. 47.3% 18–25 years-old, $p<0.0001$), community-volunteer donations (60.8% of community-volunteer vs. 39.5% of replacement, $p<0.0001$), repeat donations (61.8% repeat vs. 31.9% first-time donors, $p<0.0001$), marital status (58.4% divorced/separated vs. 51.1% single, $p=0.03$).

The sole motivation factor associated with return donation was altruism, a 55.1% return rate for those with high altruism versus 48.5% for those with low altruism ($p=0.001$). Conversely, a low level of cognitive social capital was correlated with a higher return

donation (58.5% low score vs. 52.4% high score, p=0.05). There was no association between structural social capital and donor return for a subsequent donation (p=0.65).

In the bivariate analysis (table 2), we found that donors from São Paulo (AOR 1.6, 95%CI 1.3–1.8) and Recife (AOR 1.8, 95%CI 1.5–2.0) blood centers, male (AOR 1.42, 95%CI 1.3–1.6), community-volunteer (AOR 2.23, 95%CI 1.9–2.5), repeat donors (AOR 2.85, 95%CI 2.5–3.2) and donors with high altruism score (AOR 1.27, 95%CI 1.1–1.5) were more likely to return to a new donations while donors with below average (AOR 0.78, 95%CI 0.6–1.0) and average (AOR 0.80, 95% CI 0.6–1.01) cognitive social capital scores were less likely to return.

By multivariate analysis (Table 3), we confirmed that predictors of return behavior were donating in Recife (AOR 1.57 95%CI 1.3–1.9 for replacement, and AOR 1.9, 95%CI 1.5–2.4 for community-volunteer donors) and São Paulo (AOR 1.7, 95%CI 1.4–1.9 only for community-volunteer donors) blood centers, male gender (AOR 1.6, 95%CI 1.3–1.9) for replacement, and AOR1.3, 95%CI 1.2–1.6 for community-volunteer donors), previous repeat donation(AOR 2.7, 95%CI 2.3–3.3), for replacement, and AOR=2.9, 95%CI 2.5–3.5, for community donors) and high altruism level (AOR 1.3, 95%CI 1.1–1.7), for replacement, and AOR=1.2, 95%CI 1.0–1.5, for community-volunteer donors). When we separated subjects by donation type, the results for cognitive social capital were not significant.

DISCUSSION

Our findings from tracking the return behavior of nearly six thousand blood donors at three large Brazilian blood centers over a 2-year period demonstrated that, among the more than 50% who returned for another donation, altruism was the key motivator that promoted return behavior. Unexpectedly, social capital score was not associated with a return behavior.

Altruism is defined as “the principle of the practice of concern of welfare to others”, or “a behavior that is costly to the actor and beneficial to the recipient or recipients”.[16] Costs and benefits are defined on the basis of the lifetime direct fitness consequences of a behavior and has been identified previously as the main primary motivating factor for the return to a new donation in Brazil[14], the USA[17] and Sweden[18]. A recent systematic review showed that among men who donate blood the most frequently cited motivators were altruism, positive attitudes towards incentives, health checks, and subjective norms[17]. To better understand altruism, Ferguson et al.[20] identified different subcategories of altruism, among first-time and repeat donors. Pure altruism was defined as a donation driven by only a desire to help others without any personal benefits, impure altruism (where pure altruism is combined with a “warm glow”, e.g. feeling better about yourself after donating blood) and reluctant altruism (a desire to donate when they see that others are not donating).

When evaluating reasons to donate, one must look beyond the generic altruistic reasons as massive blood campaigns typically focus on the need for blood donations to help other people. Participants in our study had altruism first and foremost on their minds when deciding whether to donate. It is noteworthy that the same term can have a variety of meanings to different individuals (mutualism, mutual benefit, cooperation, altruism) and

different terms can be viewed as having identical meanings and, thereby, inaccurately convey concepts that can obscure what is actually biologically important.[21] It is important to of distinguish between different aspects of altruism, or even more critically, to define the real concept of altruism. This information will open the possibility of more directed recruitment and retention campaigns according to the profile of the target population. For example, when targeting populations of reluctant altruistic donors instead of utilizing the slogan “give blood”, it may be more productively stated as “do your part and give blood”.

Our statistical analyzes revealed a finding that differed from what we expected for the social capital analysis at study initiation. Social capital score did not explain the likelihood of return behavior in our study population. A potential explanation for this finding is that donors who have a high level of social capital may be less likely to return for a new donation because he/she may subsequently prioritize to help society in other capacities, whether doing social work in religious institutions, visiting the local rest home for the elderly or even donating blood at other blood centers. In summary, their networking and active participation in organizations offers attractive alternatives. Brazilian blood centers need to build social capital through blood donation and to improve communication and commitment among blood donors and their communities. It is noteworthy, that blood donors from Recife and São Paulo were more likely to return for a subsequent donation than those from Belo Horizonte, even after adjustment for other characteristics, corroborating previous findings that regional differences can influence blood donorś return behavior in Brazil.[22]

Previous reposts have analyzed the relationship of demographic characteristics; however, results have been inconclusive.[22,23] Our results show that males, community and repeat donors were more likely to make a new blood donation. These findings might be partially explained by differences in the mandated inter-donation intervals between males and females, as females are not allowed to donate as frequently as males. Additionally, females tend to have more hurdles to become a frequent repeat donor. This activity is more likely to be deferred due to breastfeeding, pregnancy[24] and lower hemoglobin levels than men. Iron stores in women are usually lower due to menstruation and pregnancy[25]. A single whole blood donation removes 200–250 mg of iron from the donor, an amount sufficient to totally deplete the average women’s stores[24]. In line with a previous report, community and repeat donors have been acknowledged to be more likely to return to a subsequent donation in our country.[22]

We recognize limitations in our study. Potential participants who agreed to answer the questionnaire may in be more collaborative in general and, thus, more likely to return than donors who did not participate. However, the return rates in our study were similar to that of a previous study among a blood donor population in Brazil[22]. Brazil is a large country with many regional differences and the findings in three Brazilian public blood centers may not be representative of the Brazilian population. A strength of our study is that we were able to interview almost six thousand donors in three of the four largest blood centers in Brazil and track their return rate. Finally, socio-economic and political shifts in the Brazilian society in the last 10 years may have potentially influenced the social capital measured in our blood donors.

In conclusion, blood banks should emphasize to their communities and to their donors the need to donor blood more than once. Identification of demographic characteristics, regional differences and donation type and status as well as an increased understanding of the meaning(s) of altruism within the general population may help blood banks improve recruitment and retention of donors. Lastly, recruitment messages, slogans and campaigns must be tailored to the key motivators for blood donors in a given community.

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Appendix

Table A.

Cognitive social capital questions

Cognitive questions	Answer choices	Intended meaning
1. In the past 12 months, have you told someone in your neighborhood about any personal problem(s) that you might have had?	Yes No Don't Know	To understand trust between the respondent and his/her neighbors
2. In your neighborhood, people know each other. 3. In your neighborhood, people care about each other. 4. In your neighborhood, people do share the same values 5. In your neighborhood, there are neighbors that could give financial support in case you needed it. 6. In your neighborhood, there are neighbors that would inform you about a job opportunity. 7. Do you think that you belong to this neighborhood? 8. People in this area actively participate in the neighborhood association or community group. 9. In your neighborhood, there are neighbors that could donate blood to help other neighbors.	Totally agree Agree Disagree Totally disagree Don't Know	These questions are about the feeling of trust
10. Have you helped carry a stranger's belongings? 11. Have you allowed someone to go ahead of you in a line? 12. Have you offered to help a handicapped or elderly person across a street?	Yes No Don't Know	These questions are about cooperation and support
13. In the past 12 months, have you or any of your family members, received help from neighbors when you/they have needed it?	Yes No Don't Know	To understand if the respondent received any help (emotional or social support) from his/her neighbors
14. Do you give money to charity?	Yes No Don't Know	To understand about giving money to charity as a

Cognitive questions	Answer choices	Intended meaning
		measure of social involvement
15. Do you donate time or money to causes you believe in?	Yes No Don't Know	To understand if the respondent spends time or money for social causes.

Table B.

Structural social capital questions

Structural questions	Answer choices	Intended meaning
1. Do you belong or attend meetings of any of the following groups or organizations, networks, associations, including any non-governmental organizations? (Trade or Labor Union/ Political parties or movements; Educational groups/Cultural groups or associations; Councils /Social/ Community development groups; Religious or spiritual groups; Self-help groups; Neighborhood/village committees/groups for the elderly; Other (Specify))	Check all that apply	To understand if the respondent participates in one or more social groups or organizations
2. In the past 12 months, have you actively participated in some type of volunteer work to benefit your community or neighborhood?	Yes No No, but I would No, and I never would Don't Know	To understand if the respondent helped other members of the community
3. In the past 12 months, have you gotten together with other neighbors to try to solve some problem that is affecting the area that you are living in?	Yes No No, but I would No, and I never would Don't Know	To understand if the respondent is linked with his/her neighbors
4. People in this area actively participate in campaigns and elections.	Totally agree Agree Disagree Totally disagree Don't Know	To understand if the respondent participates in campaigns and elections.

Abbreviations:

AOR adjusted odds ratio

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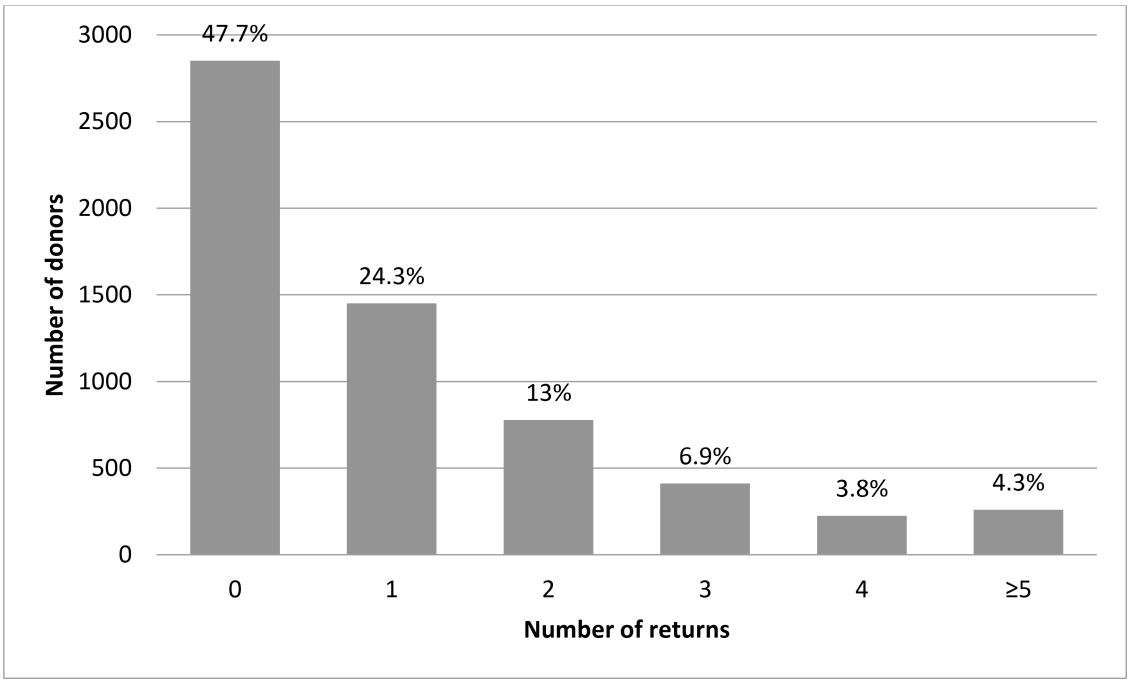

Figure 1.
Number of returns to a new donation during follow-up of two years.

Table 1.

Socio-demographic variables of the study population

Variable	No return (%)	Return (%)	Total	p-value
Blood center location				
Recife	850 (46.9)	963 (53.1)	1813 (100)	
Belo Horizonte	1097 (56.9)	830 (43.1)	1927 (100)	
São Paulo	904 (40.5)	1330 (59.5)	2234 (100)	0.0001
Marital Status				
Single	1079 (48.9)	1128 (51.1)	2207	
Married/Living together	1443 (47.5)	1596 (52.5)	3039	
Divorced/Separated	151 (41.6)	212 (58.4)	363	0.03
Missing	178 (48.8)	187 (51.2)	365	
Gender				
Female	1100 (55.1)	896 (44.9)	1996	
Male	1751 (44)	2227 (56)	3978	0.0001
Age				
18–25	849 (52.7)	760 (47.3)	1609	
26–29	604 (50.9)	582 (49.1)	1186	
30–39	742 (46.4)	858 (53.6)	1600	
≥40	656 (41.5)	923 (58.5)	1579	0.0001
Cognitive Social Capital				
Low	177 (41.5)	249 (58.5)	426	
Below average	538 (49.5)	548 (50.5)	1086	
Average	1074 (48.7)	1131 (51.3)	2205	
Above average	829 (46.9)	938 (53.1)	1767	
High	233 (47.6)	257 (52.4)	490	0.05
Structural Social Capital				
Low	670 (47.9)	729 (52.1)	1399	
Below average	308 (50.5)	302 (49.5)	610	
Average	1336 (47.4)	1485 (52.6)	2821	
Above average	265 (47.5)	293 (52.5)	558	
High	272 (46.4)	314 (53.6)	586	0.65
Self-interest				
Low	1071 (47.9)	1165 (52.1)	2236	
Average	1042 (49.1)	1081 (50.9)	2123	
High	738 (45.7)	877 (54.3)	1615	0.119

Variable	No return (%)	Return (%)	Total	p-value
Altruism				
Low	500 (51.5)	471 (48.5)	971	
Average	1146 (49.5)	1172 (50.5)	2318	
High	1205 (44.9)	1480 (55.1)	2685	0.001
Direct appeal				
Low	789 (49.9)	795 (50.1)	1584	
Average	907 (49.6)	922 (50.4)	1829	
High	1155 (45.1)	1406 (54.9)	2561	0.002
Donation type				
Community	1411(39.2)	2185 (60.8)	3596	
Replacement	1440 (60.5)	938 (39.5)	2378	0.0001
Donor type				
Repeated	1555(38.2)	2515 (61.8)	4070	
First time	1296 (68.1)	608 (31.9)	1904	0.0001

Table 2.

Results of bivariate and multivariate logistic regression analyses

Variables	OR crude (95% CI)	Adjusted OR (95% CI)
Blood center location (ref=BH)		
Recife	**1.5 (1.3–1.7)**	**1.8 (1.5–2.0)**
São Paulo	**1.9 (1.7–2.2)**	**1.6 (1.3–1.8)**
Gender (ref=female)	**1.56 (1.4–1.7)**	**1.42 (1.3–1.6)**
Donor type (ref=replacement)	**2.37 (2.1–2.6)**	**2.23 (1.9–2.5)**
Donation type (ref=FT)	**3.44 (3.1–3.8)**	**2.85 (2.5–3.2)**
Cognitive social capital (ref=low)	**1.0**	
Below average	**0.72 (0.57–0.9)**	0.78 (0.6–1.0)
Average	**0.74 (0.6–0.9)**	0.80 (0.6–1.01)
Above average	**0.8 (0.6–0.9)**	0.88 (0.6–1.12)
High	0.78 (0.6–1.01)	0.91 (0.7– 1.23)
Structural social capital (ref=low)		
Below average	0.9 (0.74–1.1)	-
Average	1.02 (0.89–1.16)	-
Above average	1.01 (0.83–1.2)	-
High	1.06 (0.87–1.28)	-
Self interest		-
Low	1.0	-
Average	0.95 (0.84–1.07)	-
High	1.09 (0.96 – 1.24)	-
Altruism		
Low	1.0	1.0
Average	1.08 (0.93–1.26)	1.16 (0.98–1.4)
High	**1.30 (1.25–1.51)**	**1.27 (1.1–1.5)**
Direct appeal		-
Low	1.0	-
Average	1.08 (0.88–1.54)	-
High	**1.2 (1.06–1.36)**	-

Table 3.

Logistic multivariate analysis by type of donation.

Variables	Only replacement donor Adjusted OR (95% CI)	Only community donor Adjusted OR (95% CI)
Blood center location (ref=BH)		
Recife	**1.57(1.3–1.9)**	**1.9(1.5–2.4)**
Sáo Paulo	1.3 (0.9–1.7)	**1.7(1.4–1.9)**
Gender (ref=female)	**1.6 (1.3–1.9)**	**1.3 (1.2–1.6)**
Donor type (ref=FT)	**2.7 (2.3–3.3)**	**2.9 (2.5–3.5)**
Cognitive social capital (ref=low)		
Below average	0.9 (0.7–1.2)	1.1 (0.8–1.4)
Average	0.7 (0.6– 1.1)	1.1 (0.7–1.3)
Above average	0.7 (0.5–1.1)	0.9 (0.7–1.4)
High	0.6 (1.4–1.1)	1.4 (0.9–2.0)
Altruism		
Low	1.0	1.0
Average	1.2 (0.9–1.6)	1.1 (0.9–1.4)
High	**1.3 (1.1–1.7)**	**1.2 (1.0–1.5)**