Social Networks and Prosocial Behavior

René Bekkers*, Beate Völker & Gerald Mollenhorst

ICS/Department of Sociology

Utrecht University

R.Bekkers@fss.uu.nl

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* To whom correspondence should be addressed. Postal address: ICS/Department of

Sociology, Faculty of Social Sciences, Utrecht University. Heidelberglaan 2, 3584 CS,

Utrecht, the Netherlands. E-mail: r.bekkers@fss.uu.nl.

Social contexts strongly affect the contributions that people make to the welfare of others and to society in general. Whether people are asked to engage in prosocial behavior and the odds that they will comply with such a request all depend on the relations of an individual with his fellow citizens – the social network. In the debate on social capital, social networks are also assumed to be crucial for civic engagement (Putnam, 2000; Hooghe, 2002). However, the state of knowledge about the empirical effects of social networks lags behind the theoretically alleged benefits of social networks for prosocial behavior. Studies of social networks have focused on the benefits of networks for occupational status, job mobility, health and social support (Granovetter, 1985; Burt, 2001; Lin & Dumin, 1986; House, Umberson & Landis, 1986).

In this paper, we study the empirical relationship of characteristics of social networks with prosocial behaviors in formal and informal contexts. Formal prosocial behavior refers to contributions of resources to some collective goal through an intermediary nonprofit organization. Formal prosocial behavior often benefits strangers. Examples of formal prosocial behavior are membership of voluntary associations, unpaid volunteer work for nonprofit organizations, philanthropy (charitable giving) and blood donation. These behaviors have often been studied as indicators of social capital (Putnam, 2000). Informal prosocial behavior refers to helping other persons with whom one has personal relationships. Examples of informal prosocial behavior are talking to a depressed friend and helping a neighbor with domestic repairs. These behaviors have often been studied as indicators of social support (Lin, 1979; Tijhuis, 1994).

With this paper, we expand our knowledge about the determinants of prosocial behavior, and we contribute to the debate on social capital by answering the question: what is it about networks that promotes prosocial behavior? We first introduce some general insights from research on social networks. Then we link these insights to prosocial behavior.

Scope-based, resource-based and relation-based social capital

Networks provide many useful things to people, like information, contacts, and encouragement. These resources obtained from networks are often called social capital (Lin, 2001). We introduce a distinction between three types of social capital, corresponding to the reasons why networks may provide resources to individuals. First, individuals may have access to more resources because they have large and diverse networks. We label this type of social capital *scope-based social capital* because it emerges simply from knowing a large number of people from a wide range of different backgrounds. The larger the scope of the network, the larger the stock of resources that individuals may access. Second, individuals may have access to more resources because they have ties to more resourceful others. *Resource-based social capital* emerges from knowing a people with more resources (e.g., those with a higher level of education). Knowing a lot of people is not very helpful when they are not very resourceful. Third, individuals may have access to *relation-based social capital* because they have strong ties with others. Relation based social capital emerges from durable, intense relationships with a high level of trust. In such networks, people will be more likely to provide help to each other. In networks with a high level of relation-based social capital, a high willingness to provide help may compensate for a limited scope and the stock of resources. Relation-based social capital also increases the likelihood that people sanction normconform behavior and punish deviant behavior. Thus, relation-based social capital produces a high degree of solidarity not by enlarging the scope and stock of resources in the network, but by social pressure to conform to social norms.

Formal and informal prosocial behavior

People may contribute to the welfare of others in many ways. We distinguish two types of prosocial behavior, corresponding to the presence of an intermediary organization

that channels the resources of donors towards beneficiaries (see figure 1). When people

engage in informal prosocial behavior, they provide a service directly to the beneficiary (see

left panel). When people engage in formal prosocial behavior, people contribute to an

intermediary nonprofit organization, which, in turn, provides a service to the beneficiary (see

right panel).

INSERT FIGURE 1 ABOUT HERE

Networks are important because they affect the relationships between beneficiaries

and potential donors. Relation-based social capital increases the likelihood that people offer

assistance to others because they share a common past and expect a common future,

increasing the amount of information about the trustworthiness of the other and the degree of

control (Buskens & Raub, 2002). Because donors and beneficiaries in the case of formal

prosocial behavior do not have direct contact with each other, these effects of strong relations

are less likely to occur. Nevertheless, they are still at work when donors are solicited

personally (Bekkers, 2004; Long, 1976). Therefore, we expect that *relation-based social

capital will increase the likelihood of formal as well as informal prosocial behavior, the

former effect being weaker than the latter.*

Scope-based social capital increases the likelihood that people find others who are

available to provide assistance simply because there are more potential helpers around.

Prestige-based social capital increases the likelihood that people find others who are better

able to provide assistance because there are more resourceful helpers around. Scope-based

and prestige-based social capital also promote formal prosocial behavior because they

increase the likelihood that people are accessible by recruitment networks of nonprofit

organizations (Brady, Schlozman & Verba, 1999; Knoke, 1991). New blood donors and

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volunteers are often recruited by existing blood donors and volunteers. Scope-based and prestige-based social capital increases the likelihood that there is at least one person who volunteers or gives blood in the network and also increases the likelihood that solicitation of contributions occurs in the network. *We expect that scope-based and prestige-based social capital will increase the likelihood of formal as well as informal prosocial behavior.* We make no prediction on the size of these effects, because they involve different mechanisms. It is hard to judge a priori whether mobilization is more important for formal prosocial behavior than availability is for informal prosocial behavior.

INSERT TABLE 1 ABOUT HERE

Data and methods

We use data from the SSND1, which contains a large number of network characteristics. First we perform a factor analysis on characteristics of networks available in the dataset to investigate whether the distinction between relation-based, scope-based and prestige-based social capital makes empirical sense. Then we show how different types of networks affect a variety of prosocial behaviors. We study access to practical and emotional support, membership in voluntary associations, unpaid volunteer work, blood donation, and giving to charities in door-to-door collections.

Access to practical support is a dichotomous measure with respondents reporting availability of at least one person for practical help with tasks in the house scoring 1 (85.33%), and respondents reporting no such person being available to them scoring 0. Access to emotional support is a dichotomous measure with respondents reporting availability of at least one person for discussion of important matters scoring 1 (84.73%) and respondents

reporting no such person being available to them scoring 0.[1] Membership in voluntary associations is a dichotomous measure with respondents reporting membership in at least one type of voluntary association from a list of 10 organizations (sports, public/social benefit, union, professional, political, neighborhood, caring, dancing, music, and other organization) scoring 1 (82.8%). Volunteer work is a dichotomous measure with respondents reporting active participation in a voluntary association providing care to others scoring 1 (18.2%). Blood donation is a dichotomous measure with respondents reporting being a blood donor at the moment of the interview scoring 1 (13.8%). Giving in door-to-door collections is a dichotomous measure with respondents who report always or almost always giving money in door-to-door collections scoring 1 (88.5%).

Do networks really provide three types of social capital?

To test our assumption that networks provide three distinct types of social capital, we factor analyzed a large number of network characteristics measured in the SSND1: network size, network density, duration of ties, trust in network members, intensity of contacts, heterogeneity with respect to gender, level of education and religion, access to occupations, the mean prestige accessed, the range of prestige accessed, the proportion of network members with tertiary education, and multifunctionality (for a description of these measures, see Bekkers, Volker, Van der Gaag & Flap, 2005). We expected that density, duration, trust, intensity and multifunctionality would cluster together on one dimension (relation-based social capital), that network size, access to occupations, heterogeneity and the range of

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[1] Strictly speaking, our measures of informal prosocial behavior measure the availability of others who are willing to display prosocial behavior towards the respondent, and not informal prosocial behavior displayed by the respondents themselves. Although this is unfortunate, we expect that the three types of social capital increase both the tendency of an individual to engage in informal prosocial behavior as well as the willingness of others in the network to engage in prosocial behavior.

prestige accessed would cluster together on a second factor (scope-based social capital) and

that mean prestige and the proportion of network members with tertiary education would

cluster on a third factor (prestige-based social capital). In the construction of these aggregate

measures based on the alters identified in the network delineating questions, we removed the

alters mentioned as providing practical or emotional support to diminish concerns about

reverse causality. The measures for multifunctionality and the proportion of protestants were

removed from the factor analysis because they showed high loadings on multiple factors.

After removing these measures, and using the conventional criterion of Eigenvalue>1, we

found a three factor solution, which is displayed in table 1. Inspection of the scree plot and a

reliability analyses of the resulting factors also supported the three-factor solution. Thus, the

factor analysis supports the assumption that networks generate three distinct types of social

capital. Density, duration, trust and intensity have high loadings on the first factor. The former

two have lower loadings than the latter. This factor represents relation-based social capital.

Access to occupations and the range of occupations accessed form the second factor, which

we consider as a measure of the scope of social networks. The proportion of all network

members with tertiary education and the prestige of the alters mentioned in the position

generator constitute the third factor, prestige-based social capital.

INSERT TABLE 2 ABOUT HERE

Two types of prosocial behavior

To test our assumption that informal and formal prosocial behavior are two distinct

types of prosocial behavior we investigated the relations between volunteering, giving in

door-to-door fundraising campaigns, membership of voluntary associations, blood donation,

and the availability of practical and emotional support (see appendix, table A).[2] By and large, we find two clusters among these examples of prosocial behaviors. We find positive relations among the examples of formal prosocial behavior (with two exceptions: membership of voluntary associations is not related to giving in door-to-door campaigns and blood donation) and a positive relation among the two examples of informal prosocial behavior, but no consistent relationships between examples of formal and informal prosocial behavior.[3] Persons who engage in a higher number of formal prosocial behaviors do not have access to social support more often than those who are not active as members, volunteers or donors. Therefore, we created two composite scores, counting the number of formal and informal prosocial behaviors that the respondents engaged in. The formal composite score ranged from 0 to 4, with a mean of 2.34 (standard deviation .92); the informal composite score ranged from 0 to 2 with a mean of 0.94 (standard deviation of .76).[4]

Analytical strategy

We conduct ordered probit regression analyses of the number of formal and informal prosocial behaviors reported by the respondents in three different models. The first model serves as a baseline, including gender, age, religious preference, minority status, church attendance, marital status, level of urbanization, level of education, income, home ownership,

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[2] We did not conduct a factor analysis because this is inappropriate for dichotomous variables. Still, such an inappropriate factor analysis clearly indicates two different factors, one for formal and one for informal prosocial behavior.

[3] Blood donation has a positive relationship with access to emotional support, but a negative relationship with access to practical support. Donations in door-to-door fundraising campaigns show a marginally negative relationship with access to emotional support.

[4] 2.6% engaged in 0 formal prosocial behaviors, 13.2% in 1, 41.4% in 2, 33.0% in 3 and 9.9% in all 4. 32.0% had a score of 0 for informal prosocial behavior, 41.7% a score of 1, and 26.2% a score of 2.

and (log transformed) number of years in community as independent variables. In the second model, we add the factor scores for cohesive, rich and extensive networks. In the third model, we remove the factor scores and introduce all network characteristics separately instead.

Results

We expected positive effects of all three types of social capital. But we find a much more complicated pattern. Table 3 shows that only scope-based social capital promotes formal as well as informal prosocial behavior. Large and diverse networks promote engagement in voluntary associations through membership, donations and volunteering, and also promote social support. Relation-based social capital promotes informal prosocial behavior but not formal prosocial behavior. Dense networks of people who have durable, intense relations and a high level of trust in each other give access to social support, but are not productive for prosocial behavior via nonprofit organizations. Rich networks have unexpected effects. Prestigeous, highly educated networks increase access to social support, but not prosocial behavior in organizational settings.[5]

INSERT TABLE 3 ABOUT HERE

When we disaggregate the factor scores for the three types of social capital into their components (see appendix, table B), we find that specific ingredients of relation-based social capital promote specific examples of civic engagement, but that the effects of components of relation-based social capital often cancel each other out. Dense networks promote blood donation and volunteering, but intense relationships tend to decrease blood donation and durable relations decrease volunteering. Trust promotes donations in door to door campaigns, but other characteristics of cohesive networks do not. The effects of compenents of prestige-

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[5] We tested for interactions of the three types of social capital, but did not find any significant effects.

based and scope-based social capital on specific examples of formal prosocial behavior are more consistent: they are more often in the same (usually positive) direction.

Conclusion and discussion

In this paper, we showed that three types of social capital can be identified from the characteristics of social networks of people, and that these three types have distinct effects on prosocial behavior. In future research, we should make clear which mechanisms get people into prosocial behavior. We offer a preliminary conceptualization of these mechanisms. The basis for this conceptualization is that social networks affect informal and formal prosocial behavior because they contain *bystanders.* Bystanders may do five different things to increase prosocial behavior of the donor. First, they may encourage potential donors to give by providing them with information about opportunities to engage in prosocial behaviour (information-effect). Through social networks, people receive information about the needs of others. Without knowledge about the existence of charities, voluntary associations, blood collection centers, people are less aware of opportunities to contribute, and are less aware of the need to do so. Through social networks, people also receive information about problems and needs of family members, friends, colleagues and others. Secondly, their prosocial behavior sets an example for others (imitation-effect). Third, they may actively search for donors who are willing to contribute resources or (mobilization-effect). Networks are often used by voluntary associations and nonprofit organizations looking for members, volunteers, donors and blood donors. Two thirds of all the people who ever volunteered in their lifetime did not start volunteering on their own initiative, but say they that others recruited them (Bekkers, 2002; 2004a; 2005a). This finding shows the crucial role that social ties play at the start of volunteering. The strength of the tie between the recruiter and the prospective volunteer is important: those who are asked to volunteer by a family member or a friend are

more likely to start volunteering than those who are asked by an acquaintance or a stranger (Bekkers, 2004a). Even more striking is the role of mobilization for charitable giving: 95% of all donations to charities in the past two weeks are made in response to solicitations by charities or intermediaries (own computation based on Schuyt & Gouwenberg, 2005).

Fourth, bystanders may reward contributions with social approval (social pressure-effect). Through social networks, people experience social pressure to engage in prosocial behaviors that are evaluated positively in these networks. Requests for help by a stranger are more likely to be ignored than requests by a familiar person. Requests for contributions to charitable causes by more familiar persons are also more effective than requests by strangers (Long, 1976; Bekkers, 2004a). Even when people have started to volunteer, social networks are of continuing importance. Volunteers who are recruited by persons with whom they have stronger ties are more likely to continue volunteering than those recruited by weak ties (Bekkers, 2005a).

Finally, they may react with a counter service of some sort (reciprocity-effect). Reciprocity is less likely in the case of formal prosocial behavior, because there usually is no direct contact between the recipient and the donor (e.g., in the case of blood donation or charitable giving). The characteristics of the social network of a potential donor affect the likelihood that information, mobilization, imitation, social pressure and reciprocity effects will occur.

In addition to the role of bystanders, networks also get us in contact with recipients of help (identification-effect). People who know someone who has received a blood donation in the past are more aware of the benefits of blood donation for others. Likewise, people who know someone with a chronic disease are more likely to donate money to a charity fighting this disease.

Figure 1. Actors involved in informal and formal prosocial behavior

Beneficiary ↕ Donor	Nonprofit → Beneficiary organization ↑ Donor
Informal prosocial behavior	Formal prosocial behavior
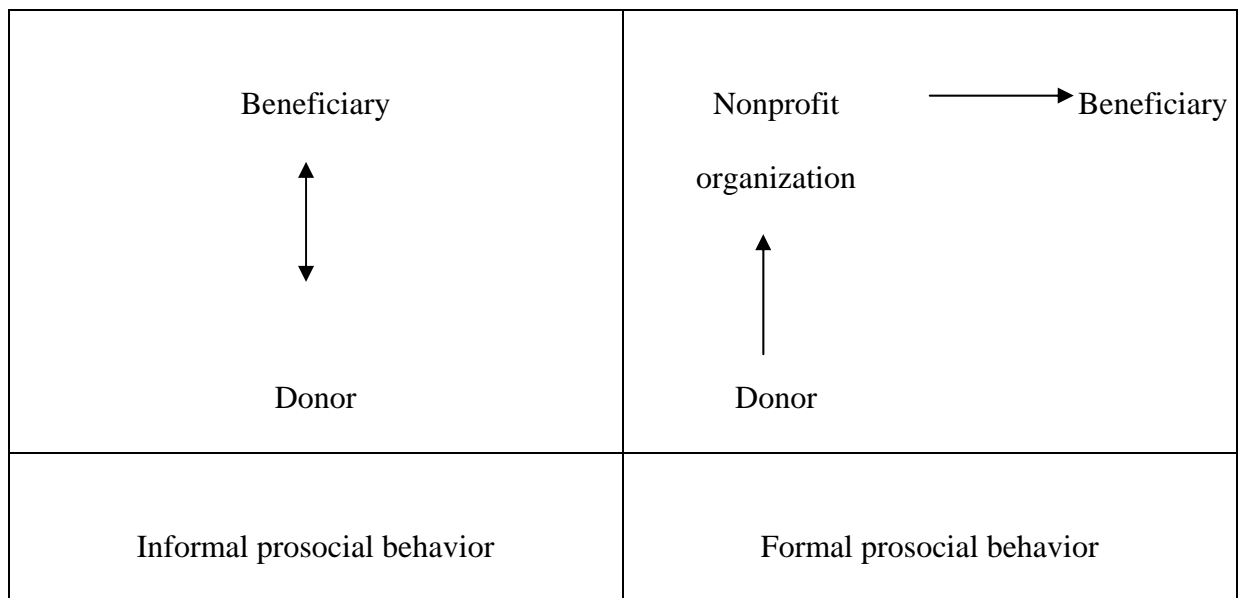
Figure 2. The role of bystanders in informal and formal prosocial behaviour

Beneficiary ↕ Bystanders Donor	Nonprofit → Beneficiary organization ↑ Bystanders Donor
Informal prosocial behavior	Formal prosocial behavior
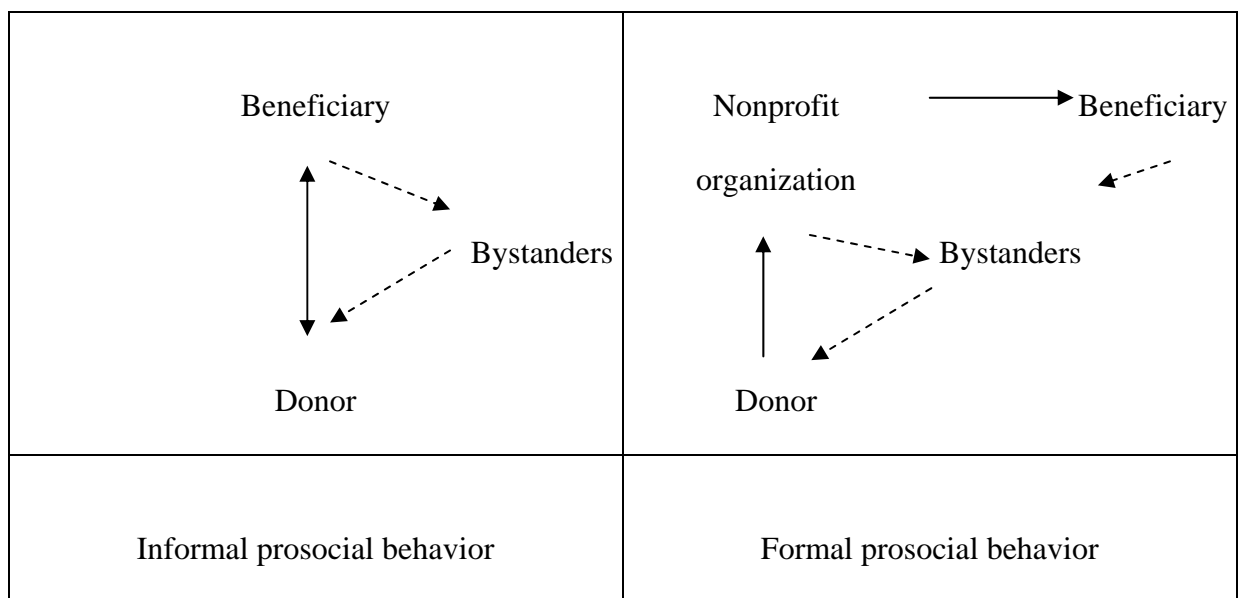
Table 1. Characteristics of networks and their hypothesized effects on formal and informal

prosocial behavior

	Characteristics of network	Hypothesized effect on formal prosocial behavior	Hypothesized effect on informal prosocial behavior
Scope-based social capital	Large and diverse	+	+
Prestige based social capital	Prestigious	+	+
Relation based social capital	Dense, durable, trusting, intense	+	++

Table 2. Factor analysis of network characteristics

	Factor 1	Factor 2	Factor 3
Network density	**.527**	.031	-.152
Duration	**.594**	.017	-.274
Trust	**.792**	.018	.174
Itensity	**.775**	-.025	.046
Extensity	-.004	**.914**	.019
Range of prestige accessed	.041	**.877**	.209
Proportion tertiary education	-.124	.121	**.824**
Prestige	.002	.095	**.812**
Reliability (Cronbach's Alpha)	.612	.615	.778
Label	Relation-based social capital	Scope-based social capital	Prestige-based social capital

Factor loadings >.30 are printed bold

Table 3. Ordered probit regression analyses of the number of formal prosocial behaviors on three types of social capital and urbanization, religious affiliation and level of education (n=1001)

	Model 1		Model 2		Model 3	
Level of urbanization	-.092	*	-.094	*	-.076	*
Catholic	.289	**	.295	**	.331	**
Reformed Protestant	.424	**	.404	**	.163	
Rereformed Protestant	.301	**	.348	**	.207	
Secondary education	.061		.003		.012	
Tertiary education	.035		-.020		-.046	
Tertiary plus education	.132		.057		.055	
Relation based social capital			-.009			
Scope based social capital			.175	***		
Prestige based social capital			.002			
Density					.031	
Duration					-.023	
Trust					.036	
Intensity					-.045	
Extensity					.264	***
Range of prestige accessed					-.059	
Proportion tertiary education					.045	
Mean prestige accessed					-.018	
Proportion of protestants					.145	***
Gender heterogeneity					-.049	

Multifunctionality			-.031
Proportion of variance explained	.049	.056	.067

*** p<.001; ** p<.01; *p<.05.

Entries represent marginal effects of z-standardized variables in ordered probit regression analyses evaluated at the means of the dependent variables, controlling for gender, age, religious preference, minority status, church attendance, marital status, level of urbanization, level of education, income, home ownership, and number of years in community.

Table 4. Ordered probit regression analyses of the number of informal prosocial behaviors on three types of social capital and urbanization, religious affiliation and level of education (n=999)

	Model 1		Model 2		Model 3	
Level of urbanization	.179	***	.170	***	.142	***
Catholic	-.038		-.049		-.004	
Reformed Protestant	-.075		-.069		-.083	
Rereformed Protestant	-.084		-.069		-.075	
Secondary education	.237	*	.125		.182	
Tertiary education	.278	*	.166		.167	
Tertiary plus education	.317	*	.149		.154	
Relation based social capital			.122	**		
Scope based social capital			.096	*		
Prestige based social capital			.096	*		
Density					.087	*
Duration					.052	
Trust					-.031	
Intensity					.068	
Extensity					.044	
Range of prestige accessed					.032	
Proportion tertiary education					.082	(*)
Mean prestige accessed					.028	
Proportion of protestants					.009	
Gender heterogeneity					.047	

Multifunctionality			.364 ***

Proportion of variance explained	.037	.047	.093

*** p<.001; ** p<.01; *p<.05.

Entries represent marginal effects of z-standardized variables in ordered probit regression analyses evaluated at the means of the dependent variables, controlling for gender, age, religious preference, minority status, church attendance, marital status, level of urbanization, level of education, income, home ownership, and number of years in community.

Appendix

Table A. Relations among prosocial behaviors

	Volunteering		Donation		Blood		Membership	Emotional	Practical
Volunteering	-----		1.93		2.69		1.55	0.85	1.00
Donation	7.68	**	-----		2.73		0.97	0.70	1.14
Blood	22.23	***	22.36	***	-----		1.28	1.40	0.71
Membership	9.39	**	0.22		1.73		-----	0.87	0.86
Practical	1.40		3.07	(*)	4.01	*	1.09	-----	2.22
Emotional	0.00		0.42		4.12	*	1.17	36.04 ***	-----

Chi squares appear below diagonal; odds ratios above diagonal. *** $p<.001$; ** $p<.01$; * $p<.05$; (*) $p<.10$

Table B. Effects of all network characteristics in final regression models

	Volunteering		Giving		Blood donation		Membership		Emotional support		Practical support	
Density	.036	**	.003		.022	*	.006		.065	***	.039	*
Duration	-.030	(*)	.005		-.003		.032	*	.023		.009	
Trust	-.000		.020	*	.001		.014		-.008		-.001	
Intensity	-.000		-.005		-.017		-.018		.017		.022	
Proportion with tertiary education	.025	(*)	.011		-.000		.008		.057	**	.038	(*)
Extensity	.050	**	.009		-.002		.061	***	.061	**	.005	
Mean prestige accessed	-.039	*	-.017	*	-.023		.021		.023		.011	
Range of prestige accessed	-.015		.000		.032	*	-.016		.015		-.022	
Proportion of protestants	.024	(*)	.033	**	.023	(*)	.017		-.007		.027	
Gender heterogeneity	-.010		-.011		.006		-.011		.002		.012	
Multifunctionality	-.002		-.002		-.019	(*)	.021	(*)	-.022		-.048	**
Explained variance	.093		.210		.053		.127		.103		.044	

*** $p<.001$; ** $p<.01$; *$p<.05$.