

ORIGINAL ARTICLE

# The embeddedness of social capital in personal networks

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## Abstract

Name generators (NGs) and position generators (PGs) have been used to measure resources embedded in personal relationships, namely social support and social capital, respectively. Comparisons of these measures adopted NGs that only elicit a small number of alters (max. 5). In this paper we explore whether the measurement of social capital with NGs eliciting larger personal networks (say 15 to 20 alters) gives more comparable results to the PG in terms of occupational prestige. To address this issue, we designed a personal network questionnaire that combined a multiple name generator (MNG) and a PG and enquired about alter characteristics and alter-alter ties for the two sets of nominations simultaneously, allowing their integrated analysis. The questionnaire was implemented in the software EgoNet to collect data from social/environmental entrepreneurs in Spain ( $N = 30$ ) and Mexico ( $N = 30$ ). The analysis shows that the two approaches capture mostly non-overlapping sets of personal network members, suggesting that the PG measured in this case available, but not accessed social capital. Remarkably the NG led to a higher average prestige for this occupational group than the PG, but also a lower heterogeneity in prestige. The consequences of using one or another approach and their interpretations are discussed.

**Keywords:** personal networks, social capital, name generator, position generator, social entrepreneurship

During the last decades, network theory has contributed decisively to the measurement of one of the most salient concepts in social sciences, namely “social capital” (Lin, 2001). Although the range of definitions is wide, from its inception on social class (Bourdieu, 1977; Portes, 2000) to the emphasis on social structure and control (Coleman, 1988), or on institutions, trust, and territory (Fukuyama, 1995; Putnam, 1993, 2000; Woolcock & Narayan, 2000), the conceptualization of social capital as *embedded resources in social networks* (Lin & Dumin, 1986) captures both structure and agency, and is able to connect micro and macro social processes in a variety of social and cultural settings (Lin, 2017).

This network-based definition has been operationalized mainly with two instruments: the name generator (NG) (McCallister & Fischer, 1978) and the position generator (PG)<sup>1</sup> (Lin & Dumin, 1986). The NG approach is intended to elicit network members (alters) connected to a respondent (ego) through a given tie definition (e.g., “those with whom you discuss important matters,” “(...) you had contact during the last six months,” “(...) you talk about job decisions,” and so on). Typically, researchers intend to capture alters with whom ego actually exchanges certain dimensions of social support, specifying multiple name generators (MNGs), one per support

dimension. Once a list of names has been elicited, respondents are asked to indicate the type of relation they have with each of these alters, as well as the relationships these alters have among each other. The advantage for the measurement of social capital is that the tie definition can be related to specific content areas (“function-based social capital”; Song & Lin, 2009) and it captures network structure (Lin, 1999). However, in terms of occupational prestige, the resulting sample of alters may not be representative of the range of occupational positions present in one’s entire personal network (consisting of hundreds of strong and weak ties, cf. Lubbers et al., 2019), as it is typically biased toward stronger ties (Lin, 1999).

One way to overcome these limitations for measuring social capital is to theoretically distinguish between network ties and resources accessible through these ties. This is precisely the aim of the PG. Assuming that resources are unequally distributed in the social structure, and that professional occupations capture the share of resources to which persons can give access, a sample of occupations whose status range represents the hierarchical structure of occupational status in a society can provide a framework for measuring the number and range of resources potentially accessible by individuals through personal contacts. The PG instrument measures whether individuals know (“access”) people in the different occupational positions (“*position-based social capital*”; Song & Lin, 2009) and enquires about the strength of the tie to the person occupying the position. The measure of social capital is thought to be more comparable and reliable (Lin, 1999) and unbiased in terms of tie strength. It usually does not capture the *relationships* among the persons occupying different positions, that is, network structure.

Research comparing the results of the two instruments (NG/MNG and PG) is scarce (Song & Lin, 2009; Chen, 2013; Matous & Ozawa, 2010; Maness, 2017) and concludes that NG typically captures an individual’s social support network, combining professional contacts with personal ones. PG, instead, captures a wider range of occupational positions based on strong and weak ties, with on average a higher upper reachability. As a measure of social capital, it has a better predictive capacity, it is more reliable and comparable across settings, because the hierarchical structure of professions is global, admitting contextual adaptations (typically by selecting a subset of occupations specific for the national context).

However, these conclusions are based on comparisons of a PG instrument of 15–18 occupations with an NG instrument based on relatively *small* numbers of alters (typically max. 5). The small network size for MNG clearly inhibits a reliable measurement of network social capital. Thus, we wondered whether the same conclusions would be drawn if social capital were measured through *larger* personal networks (e.g., 20–30 alters, see McCarty et al., 2019; Perry et al., 2018), for example, as captured with MNGs. In that case, are the two measures more comparable? If so, in what terms?

To address these issues, we designed a multisited research in Catalonia (Spain), and several locations in Mexico about the personal networks of social/environmental entrepreneurs, defined as those entrepreneurs who intend to achieve social or environmental goals by market means (Molina et al., 2018). Social entrepreneurs constitute an interesting case because social capital plays a key role in the business success (Bosma et al., 2000; Witt, 2004). Also, social entrepreneurship can be regarded as a reaction of a global social class to the shrinking formal labor market as a consequence of deregulation processes experienced globally during the last decades (McRobbie, 2015; Molina et al., 2018).

With our analysis, we aim to answer four questions. First, do the MNG and the PG capture similar levels of social capital, in terms of occupational prestige? In other words, is the social capital of the support circle comparable to that of the wider personal network? We expected that with larger networks, the two instruments are more likely to capture similar levels than reported in the literature. Second, how much overlap is there between individuals nominated on the MNG and PG? This question helps us understand to what extent the PG samples individuals beyond the supportive circle. Third, does the MNG report stronger ties than the PG, as was argued by

Lin (1999)? And fourth, and related to the third question, are the more prestigious positions in personal networks structurally connected to the less prestigious ones?

In the remainder of this paper, we will first describe the sample and methods of data collection. Subsequently, we compare the results of the MNG and PG across cases and sites. Finally, we present our conclusions and prospects of further research.

## 1. The research: sites, methods, and data

### 1.1 Sites and sample

The research was funded by two projects, one<sup>2</sup> led by the first author in Spain during 2013–2016, and the second<sup>3</sup> by the second author in Mexico, during 2014–2016, using similar methods. In both cases, entrepreneurs were contacted following a chain of references with the aid of public and private organizations aimed to support this type of ventures through accelerator/incubator services, awards, directories of resources, or training programs. The rationale for using this method is the lack of a sampling frame for this type of business, which is often conflated with charities, NGOs, or cooperatives. In the case of Spain, all the interviews were conducted in Catalonia ( $N = 43$  cases, 30 selected for comparative purposes with no missing data), whereas in Mexico social entrepreneurs were interviewed in different states ( $N = 30$ ): Aguascalientes and Jalisco (17), Chiapas, Tabasco, Tlaxcala, and Puebla (7), and Mexico City (6). Social entrepreneurs were defined as individuals with a declared social/environmental mission and a *substantial proportion of commercial income from the enterprise (ideally more than 50%)*.

The interview protocol consisted of two parts: the first collected information about the social venture, while the second collected data about the entrepreneur's personal network, using both instruments (the NG first and the PG second). The personal network data were collected using the open source software EgoNet ([sourceforge.net/projects/egonet](https://sourceforge.net/projects/egonet)). The interview typically lasted one hour and a half, and it was recorded if the participant consented. A few days after the interview, participants were briefed about the main network characteristics, compared with similar anonymous cases from which we had the same information.

Table 1 shows basic descriptive statistics of the sample of social entrepreneurs in Catalonia and Mexico (for some items there are missing cases). Social entrepreneurs interviewed in both countries are relatively young ( $M = 35.9$  years;  $SD = 9.7$ ), well-educated people. Slightly more men (57%) than women were interviewed. Their enterprises were generally small (in terms of the number of employees) and they were relatively young ( $< 10$  years).

### 1.2 Instruments

The MNG consisted of eight questions to elicit a list of names of people who support or supported the venture in one or several phases (the project, initial phase, development). Respondents were asked to nominate people who currently or in the past (1) encourage(d) respondents, (2) provide(d) them with financial capital, (3) with paid or unpaid work, or (4) with advice or information, (5) who help(ed) them with administrative issues, (6) who are/were important clients or suppliers, (7) collaborators, and (8) other people important for the business who were not mentioned earlier (see Appendix 1). There was no limitation on the number of people nominated. In total, 1,265 alters were elicited with this instrument over the 60 respondents, which is 71% of the total number of alters elicited. On average, respondents elicited 20.3 names (minimum 7, maximum 95).

In order to measure the social capital embedded in the personal network elicited with the MNG, respondents were asked to report the main occupation of each alter once the list of names was elicited. The occupational information was coded using the same occupational labels and prestige score tables as in the case of the PG, explained hereafter, and three measures were computed

**Table 1.** Basic descriptive statistics of the sample of social entrepreneurs.

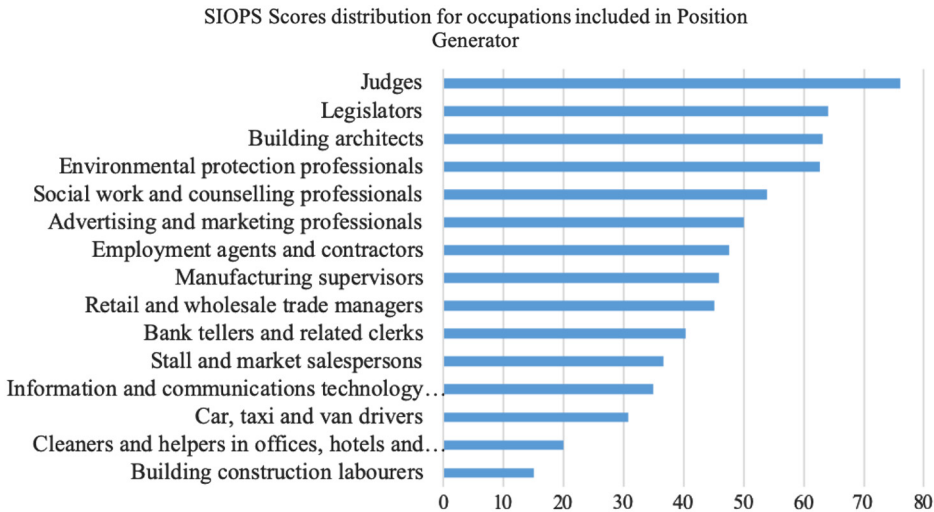
		Country		
		Mexico	Spain	Total
Gender of ego	<i>N</i> Men	17	17	34
	<i>N</i> Women	13	13	26
	<i>N</i> Total	30	30	60
Age of ego	Mean	33.3	38.2	35.9
	<i>SD</i>	11.2	7.4	9.7
	<i>N</i> Total	28	30	58
Highest level of education of ego	<i>N</i> High school	2	1	3
	<i>N</i> Undergraduate	23	19	42
	<i>N</i> Graduate	5	10	15
	<i>N</i> Total	30	30	60
Venture's years of activity	Mean	4.5	6.8	5.6
	<i>SD</i>	5.4	8.3	7.0
	<i>N</i> Total	30	29	59
Number of employees	Mean	6.8	3.9	5.3
	<i>SD</i>	10.3	5.7	8.4
	<i>N</i> Total	29	29	58

for each ego: Number of Positions Accessed (MNG\_POS), Total Accessed Prestige (MNG\_TAP), and Average Prestige (MNG\_AvgP). The average of accessed prestige is the total sum of accessed prestige divided by the number of accessed positions (i.e., the number of alters in the MNG). We also report the upper reachability (maximum prestige) and the range of accessed prestige (which is the difference between the maximum and minimum prestige).

The PG (Lin & Dumin, 1986) was designed with a sample of occupations based on the International Standard Classification of Occupations (ISCO-08) published by the International Labour Office (Ganzeboom & Treiman, 2010; International Labor Office, 2012). These ISCO occupations were ranked following the Standard International Occupational Prestige Scale (SIOPS, Ganzeboom & Treiman, 1996).

Our instrument includes 15 occupations (see Figure 1), 4 of which were context-dependent (i.e., chosen because of their relevance in either Catalonia or Mexico). These occupations were selected following two criteria: first, that they were relevant for the population object of study (Lin & Erickson, 2008), and, second, that they cover the pyramidal range of social structure without overlapping prestige (Lin, 2001). Figure 1 displays the distribution of selected occupations according to the SIOPS-08 scores.

The roster of occupations was linguistically adapted to both national contexts by changing the original denominations to the specific sites (e.g., a “van driver” is known as “conductor/a de furgoneta” in Spain, and as “conductor/a de camioneta” in Mexico). The questionnaire presented the list of professional positions randomly (i.e., not in the order presented in Figure 1; see Appendix 1 for the question order, which was the same for all respondents). Respondents were asked whether they knew anyone in each of the given positions, and if so, they were asked to give the name of the person who came to mind. This could be someone who was already nominated on the MNG instrument, or a new person, allowing us to study the overlap between the two instruments. If they knew more than one person in a given position, they were asked to report on the closest one, as is standard procedure in the PG methodology. In total, respondents accessed a mean of 9.6 alters on



**Figure 1.** SIOPS scores for the sample of occupations included in the position generator instrument, ranked. *Note:* For the two abbreviated occupations, indicated with "...", the complete wording may be consulted in Annex 1.

the PG instrument (min. = 3, max. = 15), leading to a total of 573 alters over all 60 respondents. In this case, the upper limit of names is fixed by the number of selected professional positions (15). Again, three measures (Van der Gaag et al., 2008) were computed for each ego: Number of Accessed Positions (PG\_POS), Total Prestige (PG\_TAP), and Average Prestige (PG\_AvgP). The PG provided 32% of the total number of alters (some alters overlapped between the PG and the MNG so the total sums up to more than 100%).

For the joint set of alters nominated on both the MNG and the PG, we enquired about the type of relationship the respondent had with each network member (romantic partner, family, friend, business partner, employee, etc.), the closeness between ego and alter (Likert scale; from 1 = not close at all to 5 = intimate, with an added category 0 "I no longer have contact with this person"), and alter-level attributes (age, place of residence, role in the business, etc.). Also, to assess the structural embeddedness of alters, we asked whether each pair of alters knew each other (1 = yes, 0 = unlikely or definitely not).

## 2. Results

### 2.1 Comparison between the MNG and PG in occupational prestige

Table 2 shows the scores for the main indicators of social capital for MNG, PG, and the combination of both instruments ("Full Network"). Regarding the PG, the table shows that on average, respondents in Mexico and Spain accessed 9.5 and 9.6 of the 15 occupational positions, respectively, and that the average prestige they perceived as available in their network was also similar across countries (with means of 44.4 and 44.8 for Mexico and Spain, respectively, quite similar to the average occupational prestige of the 15 selected positions of 45.8). Related to this (not in table), the maximum occupational prestige (or upper reachability) and the range of accessed prestige were also quite similar in both countries for the PG (upper reachability:  $M_{\text{Mexicans}} = 65.9$ ;  $SD = 5.5$ ;  $M_{\text{Spaniards}} = 66.6$ ;  $SD = 5.4$ ;  $t = 0.5$ ;  $df = 58$ ;  $p > 0.05$ ; range  $M_{\text{Mexicans}} = 48.2$ ;  $SD = 8.1$ ;  $M_{\text{Spaniards}} = 49.4$ ;  $SD = 7.3$ ;  $t = 0.6$ ;  $df = 58$ ;  $p > 0.05$ ). In contrast, respondents in Mexico elicited far more alters on the MNG ( $M = 25.3$ ) than respondents in Spain ( $M = 16.8$ ;  $t = 2.31$ ,  $df = 58$ ,  $p < 0.05$ ), leading to a higher total prestige in Mexico ( $t = 2.7$ ;  $df = 36.2$ ;  $p < 0.01$ ). The average

**Table 2.** Scores of three measurements of social capital for the position generator, the multiple name generator, and the full network, per country and for the full sample ( $N = 60$ ).

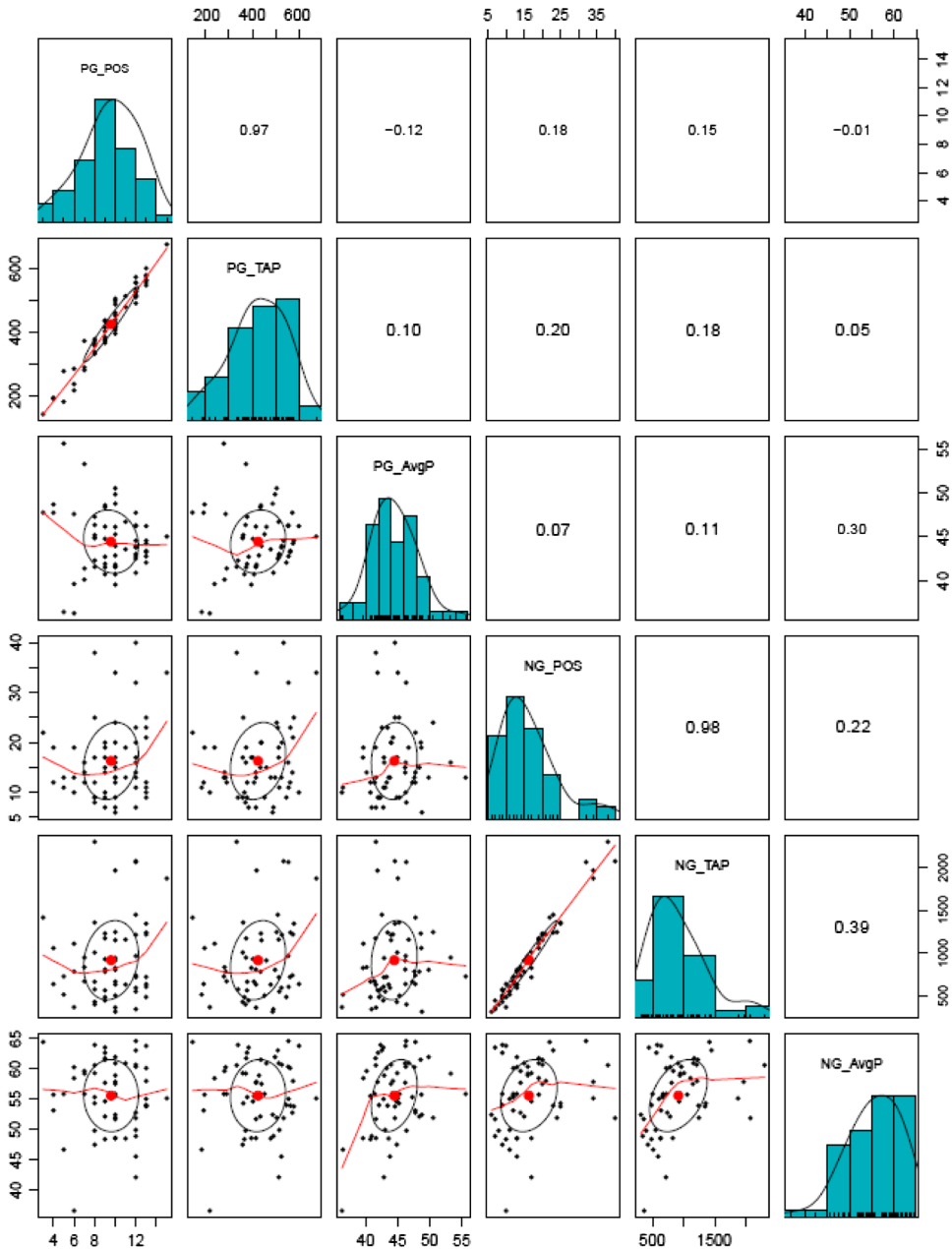
		Country					
		Mexico ( $N = 30$ )		Spain ( $N = 30$ )		Total ( $N = 60$ )	
		Mean	SD	Mean	SD	Mean	SD
Position generator (PG)	$N$ Positions Accessed (PG_POS)	9.6	2.7	9.5	2.6	9.6	2.6
	Total Prestige (PG_TAP)	425.1	119.6	424.4	116.7	424.7	117.2
	Average Prestige (PG_AvgP)	44.4	2.8	44.8	4.3	44.6	3.6
Name generator (MNG)	$N$ Names Reported	24.6	18.2	16.0	6.2	21.1	14.8
	$N$ Positions Accessed (NG_POS)	22.3	16.6	14.1	6.2	18.2	13.1
	Total Prestige (NG_TAP)	1334.8	1039.6	805.1	396.1	1070.0	824.5
	Average Prestige (NG_AvgP)	57.2	4.9	53.7	6.1	55.4	5.8
Full network (NET)	$N$ Names Reported	34.2	18.4	25.5	7.3	29.9	14.6
	$N$ Positions Accessed (NET_POS)	31.9	16.8	23.6	7.1	27.7	13.5
	Total Prestige (NET_TAP)	1726.3	1030.0	1191.1	403.2	1458.7	821.1
	Average Prestige (NET_AvgP)	53.1	4.6	50.1	4.8	51.6	4.9

prestige was also somewhat higher in Mexico than in Spain ( $t = 2.3$ ;  $df = 58$ ;  $p < 0.05$ ). Related to this (not in table), the maximum occasional prestige and the range of accessed prestige were also higher for Mexicans than Spaniards on the MNG (upper reachability:  $M_{Mexicans} = 74.7$ ;  $SD = 4.6$ ;  $M_{Spaniards} = 68.8$ ;  $SD = 6.4$ ;  $t = 4.2$ ;  $df = 52.6$ ;  $p < 0.001$ ; range:  $M_{Mexicans} = 37.7$ ;  $SD = 12.2$ ;  $M_{Spaniards} = 31.0$ ;  $SD = 9.3$ ;  $t = 2.4$ ;  $df = 58$ ;  $p < 0.05$ ). Overall, the PG was thus more stable across contexts than the MNG.

For both countries however, we find that our MNG instrument elicited more names than our PG instrument ( $t = 5.1$ ;  $df = 59$ ;  $p < 0.001$ ), leading to a higher total prestige ( $t = 5.9$ ;  $df = 59$ ;  $p < 0.001$ ). However, we also find that the average prestige on the MNG was considerably higher (approximately 10 points higher) than the average prestige on the PG (see Table 2;  $t = 14.8$ ;  $df = 59$ ,  $p < 0.001$ ). The latter finding is in part due to the MNG having a higher average upper reachability than the PG, contradicting past research, although the difference is only significant in Mexico (Mexico  $t = 7.9$ ;  $df = 29$ ;  $p < 0.001$ ; Spain  $t = 1.6$ ;  $df = 29$ ; ns). On the other hand, the range of accessed positions was considerably higher for the PG ( $M = 48.8$ ;  $SD = 7.7$ ) than for the MNG ( $M = 34.4$ ;  $SD = 11.3$ ;  $t = 8.6$ ;  $df = 59$ ;  $p < 0.001$ ), for both Mexicans and Spaniards. In other words, supportive ties of social entrepreneurs seem to be more prestigious than the ties in their overall networks, as well as more homogeneous in prestige.

Figure 2 shows the internal correlation among the three measures on each instrument. As the figure demonstrates, only the Number of Positions Accessed (\_POS) correlates strongly with the Total Available Prestige (\_TAP) ( $r = 0.97$ ;  $p < 0.01$ , and  $r = 0.98$ ;  $p < 0.01$ , respectively, for the PG and the MNG), as could be expected due to the design: the more names one mentions or the more positions one identifies, the higher the total prestige. However, these two measures do not correlate strongly with the Average Prestige (\_AvgP). More importantly, the MNG measures correlate only weakly or moderately with similar measures of the PG [ $r = 0.18$ ,  $p < 0.05$ , for the Number of Positions Accessed (\_POS), and  $r = 0.30$ ,  $p < 0.05$ , for the Average Prestige (\_AvgP)]. Thus, the average prestige accessed for support (MNG) is only moderately related to the average prestige available in the total network (PG) for social entrepreneurs.

Figure 3 shows the scatterplot of Average Prestige (\_TAP) for PG (X axis) and MNG (Y axis), by country, to explore whether the relation was context-dependent. Two outliers from Spain were

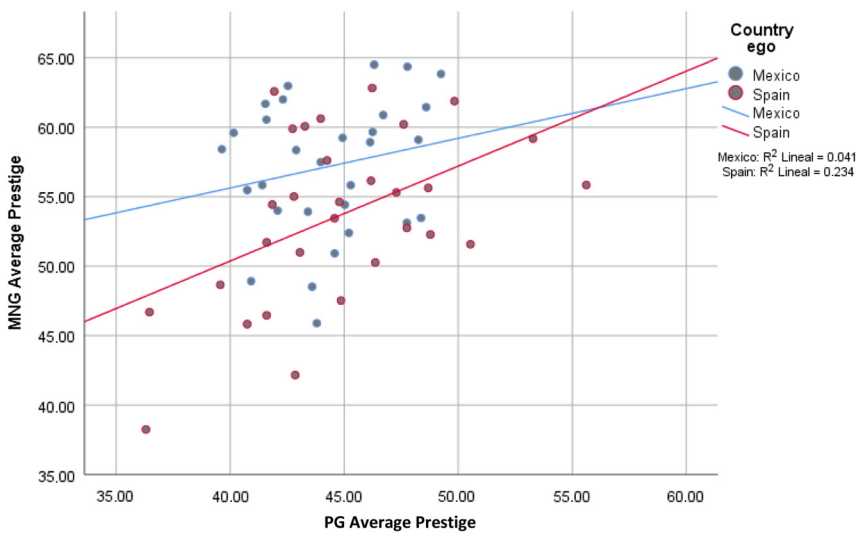


**Figure 2.** Distributions and correlations of the three measures selected for both instruments (PG and MNG). *Note:* Names and distributions of the variables are presented on the diagonal (histograms and density curves); Pearson correlations between two measures are given in the upper triangle and the scatterplots of these relations in the lower triangle, with correlation ellipses and loess curves. The pairs.panels function in R was used for the visualization. For the full names of the measures, see Table 2.

removed from the analysis (see cases 45 and 36 in the attached dataset), one on the PG Average Prestige and one on the MNG Average Prestige. The exclusion of the two individuals with the largest networks (with 64 and 99 persons), both Mexican, did not substantially alter the figure presented so there was no need to exclude these cases.

**Table 3.** Total number of alters elicited with each instrument, by country.

Generator type	Country					
	Mexico		Spain		Total	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Multiple name generator only	739	72.0	479	62.7	1,218	68.0
Position generator only	267	26.0	259	33.9	526	29.4
Elicited by both the MNP and PG	21	2.0	26	3.4	47	2.6
Total	1,027	100.0	764	100.0	1,791	100.0

**Figure 3.** Scatterplot of Average Prestige for PG (X axis) and MNG (Y axis), by country.

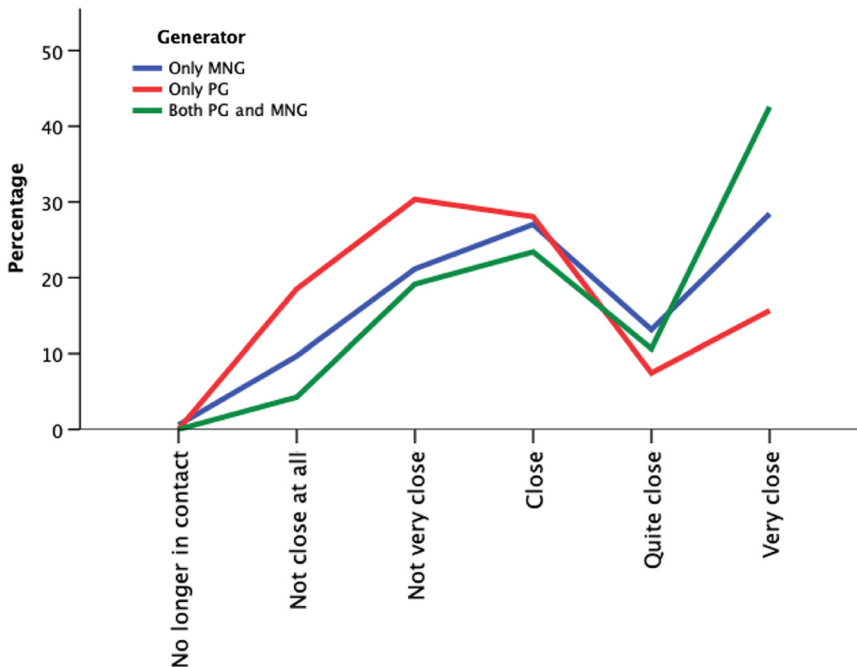
The scatterplot shows that the PG and the MNG seem to be more strongly related for Spain than for Mexico (the bivariate correlation is  $r = 0.16$ , not significant, for Mexico, and  $r = 0.40$ ,  $p < 0.05$  for Spain).

## 2.2 Overlap between alters nominated on the MNG and PG

The next question concerns the extent to which alters are mentioned on both the PG and the MNG. As Table 3 shows, there is hardly any overlap between alters elicited by the two instruments: 21 alters for Mexico (2.0%), and 26 alters for Spain (3.4%), which were elicited with both methods. In 36 networks (60%), there was no overlap at all in alters, in 14 networks (23%), 1 alter overlapped, and in the other 10 networks (17%), 2–8 persons overlapped, the precise number of overlapping alters correlating significantly with the total network size ( $r = 0.39$ ;  $p < 0.01$ ).

In comparison, it is worth mentioning that the same person can also be elicited by several of the MNG questions by design (see Appendix 1). In total, 457 persons were nominated on more than one NG of the 1,218 unique alters elicited by the MNG instrument (38%), but only 47 overlapped with the PG (4%). So, whereas overlap between NGs is relatively common, overlap between the PG and the MNG is not. Thus, the PG samples almost exclusively individuals in the wider network beyond the supportive circle, in our data.





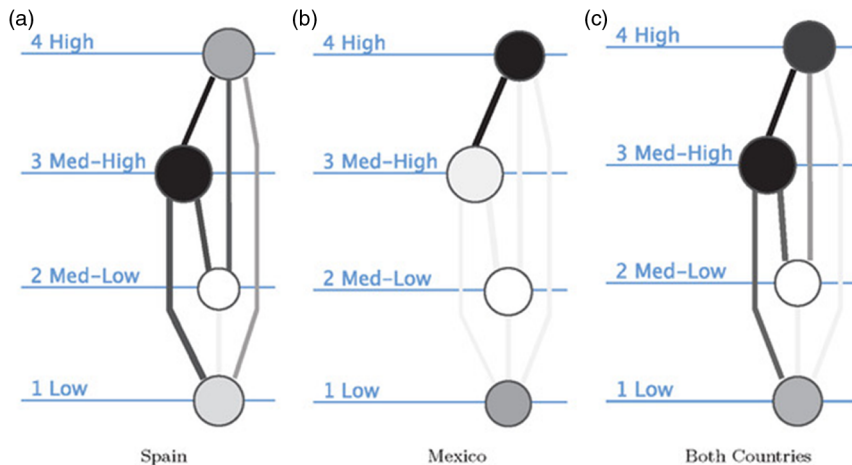
**Figure 4.** Percentage of ties at each level of ego-alter closeness for alters elicited with each instrument (MNG and PG). *Note:* Percentages of each generator sum up to 100%

### 2.3 Comparison between the MNG and PG in tie strength

Third, we aimed to explore whether the MNG reports stronger ties than the PG, as was argued by Lin (1999). Figure 4 shows the percentage of alters on each level of ego-alter closeness, separately for the MNG, for the PG, and for alters nominated on both instruments. As expected, the MNG captured stronger ties on average (at the alter level  $M = 3.3$ ;  $SD = 1.4$ ) than the PG ( $M = 2.7$ ;  $SD = 1.3$ ), but the relatively few ties that were mentioned on both generators were the strongest ( $M = 3.7$ ;  $SD = 1.3$ ;  $F = 36.7$ ,  $p < 0.001$ ; all three contrasts are significant at  $p < 0.05$ ). We can also appreciate this when looking at alters' relationship role: alters elicited with the PG were often indicated as "acquaintances" (33% of the PG versus 8% of the MNG), whereas business partners, employees, clients, suppliers, and other professional relationships were more often elicited with the MNG (in total 16% of the alters elicited with PG versus 45% of the alters elicited with MNG). In contrast, the number of romantic partners, family, and friends was comparable (in total 43% of the PG and 39% of the MNG). Nevertheless, given that weaker ties are thought to be more numerous in personal networks than stronger ties, and given that the PG is supposed to sample throughout the entire social structure, one would expect that ties that are not close at all would be the most frequent on the PG instrument. However, Figure 4 does not reflect that, in other words it is also biased toward ties of intermediate strength.

### 2.4 Comparison between the MNG and PG in the structural embeddedness of social capital

The PG presents by design a sample of ranked occupations to ego that (s)he may or may not access through personal contacts. The MNG, on the other hand, elicits alters with different types of supportive relationships with ego first and collects their occupational status afterwards (including no professional occupation, e.g., for retired people, domestic workers, and students). Returning



**Figure 5.** Clustered graphs by prestige categories elicited with PG.

to research question 4, how are network members occupying different professional positions connected among them?

To answer this question, we will summarize the collections of personal networks with the aid of clustered graphs. Clustered graphs are intended to visually simplify the comparison of a set of networks showing not just ensembles of individual nodes but classes or groups in fixed positions, showing at the same time the internal and external connectivity among classes (Brandes et al., 2008). This method allows us to cluster alters into ensembles or categories, which are then represented as nodes. In this case, we created two personal networks per respondents (one of the nodes elicited by the MNG and one of the nodes elicited using the PG) and grouped alters in 4 categories of occupational prestige, ordered in a scale from 1—low to 4—high, based on the four quartiles of the SIOPS scale. The clustered graph represents the average network characteristics. The size of the nodes in the clustered graph represents the median relative class size (number of network members in each category), the color of the nodes represents the average density of the links between the network members within a category, and edge color and width represent the average density of the links between network members of different categories.

Figure 5 displays the clustered graphs of personal networks elicited with the PG by country. As the PG covers occupations with different levels of prestige, the nodes at the four levels are of roughly similar size, showing that the number of positions “accessed” at each level is approximately the same.

The graphs show how alters elicited by the PG are indeed interconnected among them. In Mexico, individuals at the highest level of occupational prestige are highly likely to be interconnected among them, as is shown by the dark color, and to be connected to the medium-high group, as is shown by the wide edge, but connections within and between other prestige categories are much scarcer. In Spain, on the other hand, there is a high internal density in the medium-high category, but not in other categories. Relations between categories are somewhat denser than in Mexico.

Figure 6 shows the clustered graphs of personal networks elicited with the MNG by country. The MNG provides the positions of people who have supported the business, and we can see that in most cases these have a high occupational prestige. In this case, we can see how the occupational positions at different levels are strongly interconnected in the upper categories, whereas the relatively few alters in the low and medium-low category are much more scarcely connected with

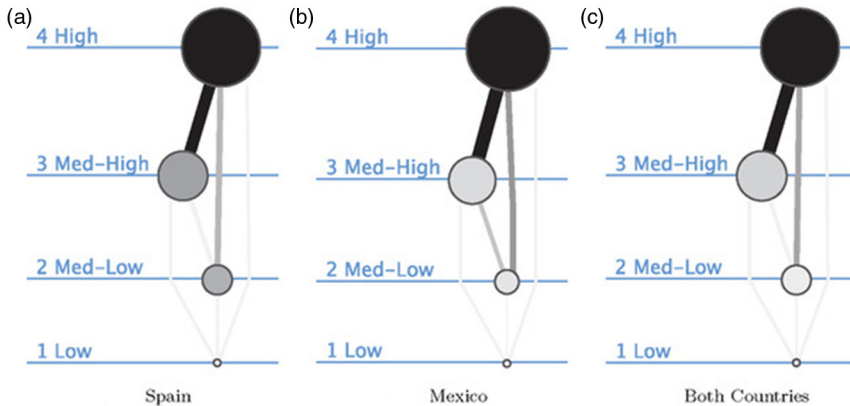


Figure 6. Clustered graphs by prestige categories elicited with MNG.

other alters of similar prestige, and with alters of higher prestige. Differences between Mexico and Spain are much smaller than for the PG.

In sum, data show how PG and MNG capture different sets of members of the personal networks of social entrepreneurs in both countries, and probably the combination of both gives a more realistic insight of the social resources available to this occupational group.

### 3. Conclusions and limitations

This paper compared two instruments for the measurement of network social capital, defined as resources embedded in social networks: the PG and the MNG. Both instruments have been used frequently in research, but they have hardly been compared, and if they have, the PG is compared with small networks elicited by a NG (max. 5 members). This paper aimed to explore whether conclusions drawn from such work would be different if the PG was compared with larger networks elicited by the MNG. The work is based on a sample of social entrepreneurs in Mexico and Spain. The main conclusions of this comparative work are as follows.

First, the PG and MNG instruments intend to capture different dimensions of social capital. The PG aims to represent the social capital of the overall personal network (also called position-based social capital by Song & Lin, 2009) and the MNG focuses specifically on the support network (function-based social capital, according to Song & Lin, 2009). In contrast to the scarce empirical evidence, we found that in the case of social entrepreneurs and with larger personal networks, the support networks (MNG) have *higher* average and maximum levels of social capital than the wider network (PG). However, the wider networks have a larger variability in occupational prestige than the support networks.

Second, the overlap between the two measures in alters is small, below 5%, which suggests that the PG does not refer to social capital that was accessed for the support of the enterprise in the past or presence, but rather to available social capital in the wider network.

Third, while the expectation that the MNG is more biased toward stronger ties than the PG was supported, the PG reflected moderately close ties better than ties that were not close at all. If we assume that the weakest ties are more prevalent than moderately strong and strong ties (e.g., the concentric circle representation of Dunbar, 1993), this may imply that individuals mostly recall ties that pass a certain threshold of closeness, for example, because they need to know alter's profession. Furthermore, as is a standard procedure in research that uses PGs, when a respondent

could think of more than one candidate for the same occupation, (s)he is asked to report on the closest tie. So far, recall bias has not received much attention in the literature for PGs. Therefore, this finding deserves further research.

Fourth, in case of the MNG, alters are structurally strongly embedded in the personal networks of individuals, particularly in the highest prestige group. Alters in the support networks had high levels and a high homogeneity of occupational prestige, and this homogeneity may facilitate the formation of ties among them. MNG networks were somewhat denser in Spain than in Mexico. The PG on the other hand is supposed to scan the whole personal network of strong and weak ties, which can include hundreds of ties (cf. Lubbers et al., 2019), and we could therefore expect networks to be less densely connected. However, we also found that alters elicited with the PG were relatively well related among each other, at the higher prestige levels. Relations between different prestige levels were clearly stronger in Spain than in Mexico.

In sum, we can say that the two instruments are complementary but not interchangeable because they capture different dimensions of personal relationships (García-Macías, 2015). Therefore, our main conclusion is that the combination of the two instruments provides a more realistic insight of the social capital that is accessed and/or accessible by a given individual or group.

This comparative exercise shows the advantages and limitations of the two instruments. PG is remarkably comparable across contexts in terms of measures of occupational prestige, easy to administer, and according to the literature quite reliable. As we have shown, complementing the instrument with alter–alter tie information gives us an understanding of the levels of structural embeddedness of the social resources. The MNG is more time-consuming for larger networks and less comparable across networks if no limitation is imposed on the number of alters. Fixing network size (McCarty, 2002) may improve the comparability of the number of accessed positions and the average accessed prestige measures, but this measure may lead to a misrepresentation of support networks, as respondents either omit supportive alters or add unsupportive ones in order to reach the fixed number. For future research, it would be interesting to also compare how the two instruments are differentially associated with relevant outcome variables.

By focusing on social entrepreneurs, we have observed the social resources mobilized by a global social class through two case studies. Obviously, we do not pretend to extract conclusions for the general population. For example, social entrepreneurs tend to be on average higher educated than the general population. If the education of respondents is correlated with the occupational prestige of network members, it is possible that the restriction of range in education has resulted in lower correlations between the average prestige accessed on PG and MNG measures than would be observed for the general population. Further data on other occupational groups and preferably with larger and more representative samples of the general population will advance our understanding of the concept and measurement of social capital from a network theory perspective.

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**Conflict of interest.** The authors have nothing to disclose.

**Supplementary materials.** For supplementary material for this article, please visit <http://doi.org/10.1017/nws.2019.30>

## Notes

- 1 Other approaches are the *resource generator* (Van Der Gaag & Snijders, 2005) and the *saturation survey* (Lin, 1999).
- 2 Project “Social entrepreneurship: local embeddedness, social networking sites and theoretical development” (CSO2012-32635).
- 3 Project “Capital Social Relacional y embeddedness local en el emprendedurismo social mexicano y análisis comparado con el caso español” (SEP-PRODEP-AAA-PISIT15-2).

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## Appendix A

### A.1 Name Generator

Interviewer: write down the names in the table of the following sheet.

First, I want to make a list of all the people who are or have been important to your company at some point in time in order to draw your “personal network.” To do this, I will ask you several questions about people who have provided you with some kind of support. You can give me the first and last names of people in abbreviated form, but it is important that you do not shorten them too much, so that you can recognize them later. It can be anyone, for example, you can live in Spain or abroad, it can be a relative, a neighbor, a coworker, etc.

- (1) First, please tell us the names of all the people who have encouraged or supported you in running the business.
- (2) Specifically, please tell us the names of all those who have provided capital or money (borrowed or donated) for the company (e.g., for start-up, financial support for investments or in times of crisis).  
(You can repeat the same names as in the first question or new people)
- (3) Please tell us the names of the people who contribute or have contributed with either paid or unpaid work in starting or developing the business.
- (4) Please tell us the names of all the people who provide or have provided you with advice or important information related to the company (e.g., on markets, investments, management, partnerships, etc.).
- (5) Please tell us the names of the people who help you or have helped you with administrative or bureaucratic procedures related to the company.
- (6) Please tell us the names of loyal clients, and regular suppliers who are or have been important to your business.
- (7) Please tell us the names of the people with whom you collaborate or have collaborated (e.g., mutual support, sharing resources, space or contacts) in activities related to your company.
- (8) Please tell us about all other people who are or have been important to your business who are not on the list.  
(Interviewer asks at the end: “We now have a list of these n people. Is anyone missing?”)

### A.2 Position Generator

Now I will ask you a series of questions about people you may know. By “knowing,” we understand that you know him/her by name and that if you saw this person on the street, you would probably start a conversation or exchange greetings. This time, for each question that follows, I will ask for only one response. If you know more than one person with this occupation, please name only the person closest to you (Interviewer: family member > friend > acquaintance). You can repeat names you have already mentioned or give a new name.

Do you know someone who works as .....? Please tell us the name of this person.

(Question is repeated for each of the occupations in Table A1.)

**Table A1.** Order of occupations in questionnaire, with ISCO-08 codes and SIOPS score

ISCO-08 code	ISCO-08 occupation	SIOPS-08 score
9112	Cleaners and helpers in offices, hotels, and other establishments	20.00
5211	Stall and market salespersons	36.69
2612	Judges	76.11
2635	Social work and counselling professionals	53.89
8322	Car, taxi, and van drivers	30.76
9313	Building construction laborers	15.00
2133	Environmental protection professionals	62.66
4211	Bank tellers and related clerks	40.28
7422	Information and communications technology installers and servicers	35.00
1420	Retail and wholesale trade managers	45.13
3122	Manufacturing supervisors	45.94
1111	Legislators	64.00
2161	Building architects	63.19
3333	Employment agents and contractors	47.61
2431	Advertising and marketing professionals	50.09

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