A comparison of measures for individual social capital *

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Abstract

For the measurement of individual access to social capital many different measures and instruments are available. In this paper, we compare social capital measures based on three measurement instruments: the Name Generator / interpreter (McCallister & Fischer, 1978), the Position Generator (Lin & Dumin, 1986), and the Resource Generator (Snijders, 1999). Each of these methods offers a slightly different view on the social capital of individuals, and retrieves information of different quality, with different costs. For each of these instruments, deductive as well as inductive measures are calculated based on notions of social capital volume/extensity, diversity in relationship and/or resource contents, and the presence of specific resources. A comparison of twenty measures resulting from the nationally representative data from the 1999-2000 Social Survey on the Networks of the Dutch (N= $1,004$) shows that there are four distinct, uncorrelated groups of indicators, each referring to different aspects of social capital: prestige social capital, network extensity, availability of concrete resources, and network diversity. In addition, these four groups of indicators have differential predictive values on four possible outcomes of social capital: personal income and personal prestige are best predicted by prestige social capital; knowing persons that helped find the current job, and knowing persons that helped find the current house are best predicted by network extensity social capital. Summarised, our results show a goal specificity of social capital as well as a high instrument-specific information content. This suggests that future social capital measurement choices should be carefully adjusted to specific topics under investigation.

Keywords: Social capital; measurement; latent trait; scale construction.

1 introduction

Over the last twenty years, many different instruments and indicators have been used for the measurement of social capital. Many of these were constructed from data that happened to be available, but were not specifically collected for the purpose of social capital research. Focusing on either individual or collective levels of social capital, this has led to many interesting findings but also caused these outcomes to be incomparable (Flap, 1999; Snijders, 1999; Van der Gaag & Snijders, 2003a). A lack of possibilities for structural comparisons has made thorough and specific testing of social capital theory a difficult assignment. For progress in the field a more standardised approach would be desirable. In this paper, we aim to bring some standardisation to the measurement of individual level social capital in particular.

Most definitions of individual level social capital have constituted of three dimensions: alters, their resources, and ways in which these can be made available to focal individuals (Flap, 2002; Lin, 2001a; Van der Gaag, 2004). For an operationalisation this comprises a multitude of possible indicators, since 'social resources' alone can constitute any kind of resource collection owned by network members. Furthermore, specific knowledge about *which* social resources embedded in *which* network configuration is associated with positive effects on individual goal attainment is still lacking. It has therefore proven to be difficult to design measures that capture a parsimonious combination of these elements, that are rich in meaning and useful in explanatory analyses. At an early stage it has even been doubted whether social capital should be measured at all (Coleman, 1990).

In previous work (Van der Gaag & Snijders, 2003a/b) we have proposed to commence a fruitful development of measurement instruments for individual social capital from several choices in operationalisation: constructing 'access' type measures that indicate potentially available, positive social resources embedded in personal social networks, that cover the 'general' life domain of the modern western individual,

and that should lead to sets of multiple, specific measures that can be used in the investigation of prospective social capital inequality research. In this paper we investigate measures developed on the basis of three social capital measurement methods that comply to these choices, for a representative sample. We do this with the objective to give an overview of possibilities in constructing measures, as well as answer two empirical questions: 1) how are measures from these methods related to one other? 2) how are these measures related to social capital outcomes?

2   measurement options

For the construction of social capital measures, we first must establish what we want to measure, and which tools are available.

2.1   principles for counting

The oldest, and also simplest notion referring to quantitative aspects of social capital is its *volume* or *extensity*. The (often implicit) theoretical argument is that bigger, larger, or simply more social capital is better social capital for individual goal attainment (Bourdieu, 1980; Burt, 1992), without specifically referring to (numbers of) relationships, resources, or the availability of any resources.

A second, more often used notion is that of *diversity*: because specific resources and relationships can be located and accessed more succesfully when more differentiation is present in the network, this results in better social capital. More specifically, this notion has been applied to either the diversity of social resource collections (Erickson, 1996; Lin, 2001a) or the diversity of network relationships, as worded in hypotheses considering the presence of weak ties (Granovetter, 1973), structural holes (Burt, 1992), and other many other typical configurations in social network structures (Borgatti et al, 1998).

A third class of morphological social capital characteristics that could be con-

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sidered for measurement is based on *specific resources* present in networks. The only social capital measure that has been used regularly in this fashion is 'highest accessed prestige' from the Position Generator model (Lin & Dumin, 1986; Lin, Fu, and Hsung, 2001), based on the hypothesis that positive social capital results from accessing network members with high prestiges (we will return to this model shortly). Identifying more of these specific (groups of) resources is one of the current aims of social capital research.

2.2   measurement construction

Many attempts of social capital measure construction have resulted in deductive, single measures, based on one or more of the above notions. However, the construction of multiple social capital measures is needed for the investigation of the goal specificity of social capital (Van der Gaag & Snijders, 2003a); ideally this leads to a set of indicators that each refer to a single, beneficial aspect of social capital.

To construct these, two routes can be followed. In a more traditional *deductive* approach, theory would distinguish important life domains in which social capital should be measured separately, leading to multiple sets of domain-covering questionnaire items ready for empirical testing. Since research investigating the goal specificity of social capital is still under development, such more specific clues about the productivity of social capital in general life domains are still lacking (Flap, 2002). Therefore, an alternative way to create multiple sets of social capital items may be performed in an *inductive* fashion. In a given data set, separate domains are then identified by correlation patterns in social capital items. These patterns then contrast social resources that are accessed either independently when uncorrelated, or simultaneously when positively correlated (Van der Gaag & Snijders, 2003a/b).

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2.3   instruments

Several different measurement instruments are available to collect data for the construction of such access-type, multiple social capital measures. Here, we consider three instruments that each feature specific merits.

The most comprehensive measurement instrument used to construct social capital measures is the exchange type Name Generator / interpreter (McCallister & Fischer, 1978). This method maps the ego-centered social network as a starting point for a subsequent social resource inventory. It can result in very detailed and informative social capital descriptions, both in terms of relationships and resources. The single 'core'-network identifying name generating item 'with whom do you talk about personal matters' stems from this approach, and has been widely used ever since (e.g. in the American General Social Survey, see Marsden, 1987).

A measurement method focusing more on the presence of social resources than relationships in networks is the Position Generator (Lin & Dumin, 1986; Lin, Fu, and Hsung, 2001). This method measures access through network members to certain occupations, that represent social resource collections based on job prestige in an hierarchically modelled society, following Lin's theories of social resources and social capital (Lin, 1982; 2001a). This instrument is more interview-friendly, and measures calculated from it are firmly rooted in theory.

Another more resource-oriented social capital measurement instrument is the Resource Generator (Snijders, 1999; Van der Gaag & Snijders, 2003b). This instrument asks about access to a fixed list of specific social resources, that each represent a vivid, concrete subcollection of social capital, together covering several domains of life. This instrument can be administered quickly, and result in easily interpretable representations of social capital, with more possibilities for use in goal specificity research.

Each of these measurement instruments can provide measures based on no-

tions of volume/extensity of social capital, diversity, and most can provide measures referring to specific resources (see Table 4).

3   data and methods

We investigate data of the "Survey on the social networks of the Dutch" (SSND), which were collected for this purpose in 1999-2000. Specially trained interviewers administered questionnaires in the respondents' homes, with interviews lasting 2 hours on average (questions of other research projects were also included). The sample ($N = 1,004$), collected in 40 randomly selected municipalities across the country, consists of two subsamples of the adult population (aged 18-65) for the Netherlands. In the initial sample, only wage-earning individuals were selected ($N = 500$); in an additional sample, all agreeing to an interview were included. This resulted in an over-representation of wage-earners in the sample. The response rate for the combined, final sample is 40% (for a more detailed description of the sample see Völker & Flap, 2003).

The questionnaire included three social capital measurement instruments complying with the specifications introduced in section 1. The set of *Name Generator / interpreter* questions (see Table 1) was based on many earlier investigations (e.g. Fischer, 1982) and the result of combined considerations: a representative image of the network composition of the general population was the main aim, but as the study was also aimed at the investigation of relationships on the work floor, more emphasis was put on questions considering work relationships.

Table 1 about here

The 'core'-network was identified with a Name Generator similar to earlier GSS-studies in the US (e.g. Burt, 1984; Marsden, 1987; Table 1, item 11). In view of future use in neighbourhood studies, one question explicitly asking for the direct

neighbours of the respondent was included (item 9); future investigations of negatively perceived relationships warranted one question asking for sour relationships (item 4). The name generating questions were spread over the entire interview, so that one part standing out as continuously asking for names was avoided.

To code the relationships, a separately printed response matrix was used. After asking a name generating question, each person mentioned in response was coded in one row of this matrix. Respondents were allowed to refer to their network members with full names, Christian names, or any other type of information that could identify separate individuals (preferably initials). For most questions, the number of names that could be mentioned was unlimited. When identical alters were mentioned in response to different questions, these were coded systematically to allow for future multiplexity and multifunctionality analyses. The full set of questions thus resulted in a list containing a maximum of 30 network members. Since earlier research showed that some relationships are especially prone to be forgotten in interview situations (Völker, 2001), the list was then shown to the respondent, asking whether important relationships were missing on this list (see Table 1, item 12).

When the list of alters was completed, the name interpretation part of the procedure started. Alter attributes that were examined were gender, age, education, whether this person had a job or not, and, if yes, a description of the job. Relationship attributes were perceived relationship closeness, intensity, frequency, origin, trust, liking, geographic nearness, and expected continuation of the relationship in five years' time.

To provide information for measures of network structure, at the end of the interview, the relationships between alters first named in response to questions 2a, 2b, 3, 7, 8, and 11 (see Table 1) were investigated. Respondents indicated whether pairs of alters (1) avoided each other, (2) did not know each other (3) knew each other hardly (4) knew each other well, or (5) knew each other well and also got along very well. To enable the calculation of a density measure, these values were dichotomised

into (0) avoiding each other, hardly knowing each other, or not knowing each other at all, or (1) knowing each other well and possibly getting along very well.[1] A network density measure was calculated as the number of relationships coded 1, divided by the total number of alter pairs mentioned.

The *Position Generator* instrument consisted of a large set of 30 items (Table 2), based on earlier research in the Netherlands (Boxman et al, 1991; Moerbeek, 2001), and the former GDR (Völker, 1995; Völker & Flap, 1999).

Table 2 about here

It was assumed that this set of occupations was representable for the Netherlands in 1999. The occupations were coded using standard codes for occupations of the Dutch Central Bureau of Statistics (CBS, 1992) and linked to Sixma and Ultee's 1992 prestige measures (Bakker et al, 1997).

The general question was whether the respondent knew anyone in each of these occupations. As a criterion of 'knowing' a person, the respondent was asked to imagine that when accidentally met on the street, he or she would know the name of that person, and both could start a conversation with each other. A second question asked to identify the person as an acquaintance, a friend, or a family member holding that occupation; the exact interpretation of these answer categories was left up to the respondent. Responses to the items were coded as (0) no person at all (1) an acquaintance (2) a friend or (3) a family member. Following this increasing order of tie strength, only the strongest relation was coded. Thus, when a respondent mentioned an acquaintance in response, it was asked whether he or she also knew a friend or family member; when a friend was mentioned, whether a family member in that position was also known, and when a family member was mentioned as a first response,

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[1] Since relationships between alters mentioned in response to name generators 2b (given advice) and 3 (sour relationships) referred to other than positive social capital relationships, these were subsequently omitted.

the interviewer moved to the question about the next occupation. Different from other Position Generator studies, this could result in information implicitly including an assumption of a positive effect of accessing social capital through stronger ties. To avoid this bias, for the calculation of social capital indicators answers to Position Generator items were dichotomised as (1) 'at least one person, in any relationship' or (0) 'no person at all'.

The *Resource Generator* consisted of 33 social resource items, resulting from an iterative process following several theoretical deductions described elsewhere in more detail (Van der Gaag & Snijders 2003a/b). For each of these resources it was expected that members of the general population of the Netherlands would consider its contents useful social resources, and find it acceptable to exchange or ask for these resources with people they knew (see Table 3).

Table 3 about here

The general Resource Generator question was whether the respondent knew anyone giving access to each of the items. The minimum criterion for 'knowing' a person, the labeling of the relationships, as well as the coding of answers were the same as for the Position Generator (see above). Since a bias of accessing social capital through stronger ties was also possible for all items included in the Resource Generator, for some analyses its answers were dichotomised as (1) 'at least one person, in any relationship' or (0) 'no person at all'.

4   results

4.1   scale distributions

For each of the three measurement instruments, social capital indicators based on notions of volume/extensity, diversity, and specific resources (see section 2.1) were calculated; also, inductive measures were computed. Table 4 reproduces characteris-

tics of the 20 resulting social capital measures.

Table 4 about here

For the Name Generator we computed 8 indicators. The first, *network size*, is a typical volume measure counting the total number of people mentioned in response to all questions. Seven other measures are all based on alter or relationship characteristics previously discussed in the social capital literature as having positive effects on personal goal attainment when showing network diversity: age, gender, education, and relationship strength (see e.g. Campbell, Marsden & Hurlbert, 1986; Campbell & Lee, 1991). For gender and education, these were calculated as Simpson's Index of Qualitative Variation (IQV; cf. Agresti & Agresti, 1977); for age and tie strength as network-level standard deviations. The measure of network density (calculation see methods section) should work as an inverse indicator of network diversity: seen from Burt's perspective on structural holes (1992), more disconnected networks give access to more diverse relationships. A final network diversity measure explicitly referring to actual exchanges with network members is the number of different name generator questions in answer to which at least one alter was mentioned. For the construction of this measure, it was assumed that each item refers to the exchange of specific resources (Van der Gaag, 2004: ch.8).[2] An inductive cumulative scaling analysis resulted in a subscale in this measure, indicating access to diversity specifically in work relationships (see Van der Gaag, 2004: ch.8) .

Since the introduction of the Position Generator (in Lin & Dumin, 1986), the construction of social capital indicators from this instrument has been largely standardised. Three deductive measures are directly derived from Lin's social capital propositions (Lin, 2001a:61-63). *Highest accessed prestige* is a measure tapping specific social resource information from networks (see Table 4). *Range in accessed*

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[2]For some of the Name Generator items this is questionable, e.g. items 2b and 3; however for reasons of consistency all items have been included in this measure.

prestige (calculated as the difference between highest and lowest accessed prestige) and *number of different positions accessed* are both resource diversity measures. In addition, we calculated two less often used Position Generator measures. The *average accessed prestige* is a measure tapping network level specific social resource information, and is calculated as the mean prestige of the accessed occupations. *Total accessed prestige* is a social capital volume measure used in some older Position Generator studies (cf. Flap & De Graaf, 1986; Hsung and Hwang, 1992), and calculated as the cumulative prestige of all occupations accessed. Inductive cumulative scaling analyses of the Position Generator items identified two additional measures: one scale referring to higher prestige occupations, and one indicating access to lower prestige occupations (Van der Gaag, 2004: ch.6).[3]

From the Resource Generator only one deductive diversity measure was calculated: the total number of resource items accessed, calculated as the sumscore of all items. In an inductive fashion, cumulative scaling identified four social capital subscales referring to specific resource collections present in social networks: prestige and education related resources, entrepreneurial resources, general skills, and personal support oriented resources (Van der Gaag & Snijders, 2003a/b).

4.2 between-model comparisons

To investigate the extent to which all measures listed in Table 4 refer to different dimensions of social capital, a principal component analysis was performed over all 20 measures. An overview of the cumulative explained variance (the 'scree plot', not shown) indicates that five components adequately summarise the measures; these all have an eigenvalue greater than 1, and together account for 63% of the explained variance.

Especially some of the network measures show low communalities for this five-

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[3]More specifically, the Position Generator items form a bipolar unfolding scale for the SSND data; the two cumulative scales are reconfigurations of either end of this scale.

factor solution (Table 5, first column): diversity of tie strength, diversity of education, and diversity of gender are less well summarised by these factors and possibly form minor, additional social capital subdimensions.

<center>*Table 5 about here*</center>

Since correlations between the components provide interesting information about the social capital structure of networks, a Oblimin factor rotation (with $\delta=0$) allowing for a correlated solution was performed. This resulted in the loading patterns depicted in Table 5.[4] This pattern shows a remarkable grouping of all social capital measures over the components, that coincides with the measurement instruments they were originally constructed from.

A first component captures all Position Generator measures that refer to higher and more diverse network prestiges; access to lower prestige occupations however loads positively also on a third component, that also shows negative loadings for two measures indicating access to higher prestige. Since Position Generator items together form an acceptable bipolar unfolding scale for these data (Van Der Gaag, 2004: ch.6), the appearance of these two components can be explained as a statistical artifact: both refer to the same dimension (this also causes a positive loading on the first factor for 'access to lower prestige occupations'). All measures referring to network extensity load high on a second component; clearly, this factor refers to an aspect of network volume. Subcollections of specific accessed resources identified with the Resource Generator, as well as their sumscore, load on a fourth component. Interestingly, the Resource Generator social support scale also loads positively on the second component (apparently, getting social support is also a question of having an extensive enough network). Finally, all Name Generator measures referring to network density and alter diversity form a fifth component. Since larger networks are more likely to show a lower density, it is logical that the network density measure also

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[4]An almost identical loading pattern was found for a varimax rotation (not shown).

<center>13</center>

loads negatively on the second component.

Although the Oblimin rotation allowed for correlation between the five compo-
nents, they are only slightly correlated ($\rho \leq 0.30$; highest correlation between factors
1 and 4). Since each factor shows loadings of measures constructed from only one
single measurement instrument, and these factors are also almost uncorrelated, the
three measurement instruments therefore clearly measure distinct aspects of individ-
ual social capital.

4.3 predictive values

A final question is whether the five social capital components indeed have distinctive
value in predictive analyses of returns to social capital. To investigate this, regressions
were performed for four possible returns: personal income, personal prestige, knowing
someone that helped find the respondent's current job, and knowing someone that
helped find the respondent's current house.[5] Since the basis of social capital research is
an inequality question, first four baseline models only including independent variables
standard to social mobility models were calculated for these outcomes (Tables 6 and
7). Second, factor scores from all five social capital components from Table 5 were
added to the models.

Gender and education are significant and substantial predictors of *income* for
the Dutch population ($R^2_{adj} = 0.27$): males have higher incomes than women, and
higher educated persons earn more than lower educated (Table 6, left panel). In a
model including social capital, variables indicating access to prestige-related social
capital are the only two significant contributions of the five social capital variables:
accessing higher prestiges positively predicts personal income, and accessing lower
prestiges negatively predicts personal income. When compared with the baseline

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[5]Both 'Knowing someone that helped find the respondent's current job', and 'Knowing someone
that helped find the respondent's current house' are dichotomous variables constructed from Name
Generator items 1 and 6, Table 1.

model, social capital variables account for 16%, and gender, human and inherited resources for 84% of the prediction of income.

The respondent's *occupational prestige* is well predicted by gender, income, and prestige of father's occupation ($R^2_{adj} = 0.32$); these are all highly significant predictors. Men achieve higher prestiges than women, education is also strongly correlated with prestige, and father's prestige has a small, additional positive influence (Table 6, right panel). Significant social capital predictors are the same as for income: accessing higher social prestiges positively predicts personal prestige, and accessing lower social prestiges negatively predicts personal prestige. A comparison between the baseline model and model including social capital variables learns that 14% of the explained variance is accounted for by social capital, and 86% by gender, and human and inherited resources.

Being more 'social' outcomes of social capital, knowing persons that helped find jobs or houses is not very well explained by baseline mobility predictors. Gender, education, and father's prestige are unrelated to these outcomes, and for both outcomes all the explained variance comes from the social capital variables (Table 7). *Knowing someone that helped find the current job* is predicted most significantly by network extensity social capital, and to a lesser extent by alter diversity social capital (Table 7, left panel). Interestingly, when social capital is accounted for, a positive effect emerges for those having a lower education. Finally, *knowing someone that helped find the current house* is less well predicted by social capital (Table 7, right panel), and only shows a positive, significant effect for network extensity social capital.

5   discussion

In this study we investigated twenty different indicators for individual social capital, and compared these for a large population representative sample in the Netherlands.

It was shown that three different measurement instruments for the social capital of individuals not only retrieve information of different quality, but also of very different substance. Also, for several outcomes of social capital, the predictive values of each of these indicators proved different.

5.1   comparison of instruments

An overview of measures shows that each instrument *can* retrieve information about specific resource configurations, diversity in resources, diversity in relationships, or sheer volume of social capital. Quality and price of the retrieved information are variable, however.

For social capital measurement, the Name Generator / interpreter offers versatility. Its format allows for retrieving information leading to almost any desired form of social network information. This flexibility is also one of its weaknesses, however, and has already resulted in many different, incomparable findings (Lin, 2001b:16). In our results, we have mainly presented Name Generator measures based on alter and relationship information, since Name Generator studies usually include this type of information rather than data about resources embedded in social networks. Possibly, the reason for this is that relationship attributes (used in more popular complete network studies) as well as alter attributes need to be retrieved in the name interpretation part of the interview procedure: it is this part that takes up a the most interview time, and generally asks for conciseness. In past social network investigations, attention spent on measuring relationship characteristics may therefore have gone at the cost of including questions asking for social resource information. Other limitations of the instrument include the collection of possibly superfluous data, and practically, the often lengthy interviews needed (Van der Gaag & Snijders, 2003b). These characteristics easily point to a tentative conclusion that the Name Generator / interpreter instrument should be considered only when one of the following types of social capital information is needed: 1) detailed specification of relationship strength,

when the actual availability of resources or reciprocity of exchanges is studied 2) network size estimation 3) network structure configuration. Neither of these types of information can be retrieved with the Position Generator or Resource Generator instruments. However, when the objective of a social capital study is a more general comparison of access to standardised social resource collections, the researcher may want to make life a little easier for him- or herself.

Being more easy and systematic to construct and administer, the Position Generator is a more interview-friendly instrument, that can deliver social capital measures that refer more to social resources than social relationships, and which are solidly founded in theory. Its drawback is that it also retrieves information in terms of prestiges *only*, which may not be useful for every type of social capital investigation: especially when outcomes of expressive actions (e.g. companionship, psychological well-being, and emotional support) are studied, other resources than those indicated by occupational prestige may be more worthwhile (Van der Gaag & Snijders, 2003b). In our results, an overview of measure distributions (Table 4) showed that some of the Position Generator measures are the most skewed of all twenty indicators. Since the inclusion of skewed measures in multivariate analyses can lead to wrong estimations of coefficients, this is a disadvantage when they are to be used in predictive models explaining outcomes of social capital. Finally, individual values on Position Generator measures also show the lowest variation over the population, as indicated by their coefficients of variation (Table 4); this means they can make the least precise distinction between individual collections of accessed social capital.

Finally, the Resource Generator instrument is also relatively easy to use, and retrieves data that allow an easy interpretation. However, some of its measures as yet have limited use, since some do not show very large variations in possible scores. Further development and testing of this instrument (Webber, 2003) may improve on this. In addition, the Resource Generator proves a challenge to construct, since it is hard to come up with questionnaire items tapping distinct, useful social resources,

which are not accessed by a large majority in a population (Van der Gaag & Snijders, 2003b).

5.2   comparison of measures

From our results it is clear that each of the three instruments captures different aspects of social capital. Since many studies considering the effects of social capital have used different measurement instruments, this could imply that many reported results have been about different aspects of social capital. In other words, it seems that social capital studies observing similar phenomena with different measures are really incomparable.

The same finding also offers good news, however. The fact that measures from each of the measurement instruments are independent also implies that each instrument has something to add over another. Apparently, there are separate aspects of social capital that are each covered by a different measure: the extensity of a network, the variety of persons and their attributes in a social network, and their resources all concern different phenomena. These analyses give a first indication of how predictions with multiple sets of specific indicators can help understand the goal specificity of social capital, as sketched earlier in Flap (1999) and Van der Gaag & Snijders (2003a).

Moreover, the usefulness of this finding is indicated by the fact that different aspects of social capital indicators show up as significant predictors for different returns to social capital. The results found here imply that personal income and occupational prestige can both result from processes and resources at the personal and network level, and in addition suggest that in the Netherlands, personal resources are more important to achieve these than social capital. For such clearly instrumental outcomes of social capital actions the significant 'prestige social capital measures' indicate that access to specific network members may be needed in contrast to more temporary returns to social capital. For finding a house and the current job, for ex-

ample, not resources or prestige but extensity and variety of relationships in the social network seem more important. This can be understood in the sense that information - one of the main resources exchanged when receiving help to find the current house or job - may come from any kind of relationship as a by-product of any kind of daily interaction: subsequent action to be taken to accomplish the associated goals will largely thrive on personal resources. Summarised, it is clear that not just *any* kind of social capital is important when aiming for a certain return. With the present data, causal interpretations are tentative however, especially when prestige and income are considered: a lot of work—beyond the scope of this paper—is still needed to clarify the extent to which personal resources amplify social capital effects, and vice versa. Also, the effect of one's social background in the creation and use of social capital needs further clarification: in the simple models presented here we cannot distinguish which part, or which kind of social capital is created by the individuals themselves, and which part is inherited.

Since each of the presented social capital measurement instruments puts different emphasis on the various dimensions of social capital, there is no clear-cut advice that can be given as to which instrument or measure has advantages over another. Instead, these results call for a careful choice in selecting measures, depending on the aim of a social capital study. For general population studies, in which outcomes of instrumental actions with social capital are observed, the Position Generator remains a useful instrument, which is mirrored in its current popularity. However, its limitations should also be considered. For more context-specific studies of general social capital access (including resources useful for both instrumental and expressive actions), as well as exchanges of very particular kinds of resources, the resource generator may be a more useful instrument. Finally, when variations in relationships or personal attributes are studied in social networks, or for even more extensive studies social network structure, name generator instruments remain be the most valid and useful

option.

However, for smaller-budgeted, more general social capital studies, a strict choice between these models may not even be necessary: an inclusion of both the Position Generator and Resource Generator in questionnaires is feasible, since they take little interview time yet appear to retrieve different and therefore complementary social capital information. It is then however important to have well-tested versions of both instruments, which is as yet more problematic for a Resource Generator than for a Position Generator (Van der Gaag & Snijders, 2003b).

One major point for discussion remaining is whether the current findings are indeed different social capital contents tapped by different measurement instruments, or, alternatively, interview effects that result from the different ways in which respondents search their memory to give clues to the contents of their social networks. In the present data, one option remains for future investigation this. The name interpretation part of the Name Generator instrument also considered the current job status of alters; a comparison between the resulting access to occupational prestiges with that of the Position Generator may reveil instrument-specific effects.

A further sociological testing of the relationships between social capital measurement intruments may also retrieve valuable additional knowledge. Since several studies have mentioned the inclusion of both Name Generator and Position Generator data (e.g. Völker, 1995; Boxman et al, 1991; Moerbeek, 2001; Angelusz & Tardos, 2001), replications of the relationships between the measures we found here is feasible.

As yet, in this paper we have focused on the structure of social capital for a general population only. Another route that may be taken in future measurement investigations may be to perform dimensional analyses of the social capital of more specific populations. Since individuals from different social subgroups (based on gender, income, or education) have been shown to access social networks different in size, and possibly also composition, these groups may also show differently structured social capital. Together, such leads may not only add to a better research methodology,

but also to a better understanding of how social capital actually works.

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Table 1: Responses to Name Generator items: percentage of sample that mentioned at least one alter per item, range and mean (Survey on the social networks of the Dutch (SSND) 1999-2000; $N = 1,004$).

	"Do you know anyone who..."*	% 'yes'	number of alters mentioned	
			range	*mean (std. dev.)*
1	helped you get your current job	27	0-2	0.3 (0.47)
2a	gives advice on problems at work	73	0-8	1.4 (1.31)
2b	you give advice regarding problems work	65	0-13	1.7 (1.75)
3	disturbes you in doing your job	28	0-5	0.4 (0.70)
4	you work together with often	71	0-7	1.4 (0.94)
5	is your boss	68	0-4	0.7 (0.54)
6	helped you get this house	28	0-5	0.3 (0.51)
7	helps you with small jobs around the house	88	0-6	1.7 (1.30)
8	keeps a spare key to your house	81	0-6	1.5 (1.20)
9	is your direct neighbour	88	0-6	1.8 (0.98)
10	you go to for social visits	94	0-14	3.9 (2.09)
11	you talk to about important matters	87	0-14	2.4 (1.97)
12	is another person important to you	49	0-10	0.9 (1.30)
	average	65		0.9

* As a criterion of 'knowing' a person that could give access to each of the Name Generator items, answers to all original questions were recoded into (0) 'no person at all' or (1) 'at least one alter, through any relationship (see text).

Table 2: Responses to Position Generator items: percentage of sample that mentioned at least one alter per occupation in any relationship, and strongest relationship when known. (Survey on the social networks of the Dutch (SSND) 1999-2000; N = 999).

item #	"Do you know** anyone who is a/an"	prestige* U&S'92	% yes	relationship if 'yes' (%) acquaintance	friend	family member
11	lawyer	86	47	40	25	35
1	doctor	84	50	41	19	40
15	policy maker	82	45	33	28	39
3	engineer	76	65	24	21	56
17	information technologist	68	66	30	27	42
7	manager	67	66	21	27	52
6	director of a company	67	71	24	24	52
10	trade union manager	66	17	57	20	23
14	scientist	65	42	26	28	46
4	higher civil servant	64	53	35	21	44
9	estate agent	64	31	59	20	21
12	mechanic	63	69	23	20	57
8	teacher	62	73	23	26	51
18	police officer	54	42	53	20	28
19	secretary	52	67	32	26	42
20	insurance agent	52	40	53	19	28
13	book-keeper/accountant	52	63	37	22	40
16	musician/artist/writer	45	54	30	31	39
22	nurse	44	75	26	22	52
26	engine driver	44	18	41	17	42
30	hairdresser	39	48	53	20	27
2	cook	39	46	40	24	36
23	farmer	36	50	34	17	49
21	foreman	27	26	39	18	43
25	postman	26	28	57	17	26
24	lorry driver	26	50	41	17	42
27	sales person	22	62	28	23	50
29	cleaner	20	35	52	15	33
28	unskilled labourer	15	38	41	17	42
5	construction worker	15	66	34	18	48
	average	41	50	38	22	41

* Retrieved via standard codes for occupations of the Dutch Central Bureau of Statistics (CBS, 1992) and linked to Sixma and Ultee's 1992 prestige measures (Bakker et al, 1997). ** As a minimum criterion of 'knowing' a person that could give access to each of the 30 occupations, the respondent was asked to imagine that when accidentally met on the street, he or she would know the name of that person, and both could start a conversation with each other. For coding of strongest relationship when 'known' see text.

Table 3: Responses to Resource Generator items: percentage of sample that mentioned at least one alter per resource item in any relationship, and strongest relationship when known. (Survey on the social networks of the Dutch (SSND) 1999-2000; $N = 1,004$).

| | "Do you know anyone who..." | % yes | *if yes, access through* | | |
			acquaintance	friend	family member
1	can repair a car, bike, etc.	83	16	18	66
2	owns a car	87	0	3	97
3	is handy repairing household equipment	72	12	17	71
4	can speak and write a foreign language	87	4	11	84
5	can work with a personal computer	90	2	9	89
6	can play an instrument	79	10	16	74
7	has knowledge of literature	70	9	23	67
8	has senior high school (VWO) education	87	6	14	81
9	has higher vocational (HBO) education	94	6	13	82
10	reads a professional journal	78	7	13	81
11	is active in a political party	34	34	26	39
12	owns shares for at least Dfl.10,000	54	11	21	67
13	works at the town hall	42	44	23	34
14	earns more than Dfl.5,000 monthly	76	10	19	71
15	own a holiday home abroad	41	34	26	41
16	is sometimes in the opportunity to hire people	65	21	23	57
17	knows a lot about governmental regulations	69	23	25	52
18	has good contacts with a newspaper, radio- or TV station	32	36	24	41
19	knows about soccer	80	7	16	77
20	has knowledge about financial matters (taxes, subsidies)	81	15	22	64
21	can find a holiday job for a family member	61	29	23	47
22	can give advice concerning a conflict at work	73	22	32	46
23	can help when moving house (packing, lifting)	95	4	17	79
24	can help with small jobs around the house (carpenting, painting)	91	9	20	70
25	can do your shopping when you (and your household members) are ill	96	11	24	64
26	can give medical advice when you are dissatisfied with your doctor	56	20	31	48
27	can borrow you a large sum of money (Dfl.10,000)	60	3	13	84
28	can provide a place to stay for a week if you have to leave your house temprorarily	95	2	15	83
29	can give advice concerning a conflict with family members	83	3	33	64
30	can discuss what political party you are going to vote for	65	5	27	68
31	can give advice on matters of law (problems with landlord, boss, or municipality)	64	24	32	44
32	can give a good reference when you are applying for a job	65	37	37	26
33	can babysit for your children	57	12	17	71

As a minimum criterion of 'knowing' a person that could give access to each of the 33 resource items, the respondent was asked to imagine that when accidentally met on the street, he or she would know the name of that person, and both could start a conversation with each other. The name generating questions were open, and relationship information was recoded into Resource Generator categories (see text).

Table 4: Distributions of social capital measures from Name Generator, Position Generator, and Resource Generator items (Survey on the social networks of the Dutch (SSND) 1999-2000; $N = 1,004$).

instrument	measure	type*	min	max	mean	st.dev.	coefficient*** of variation	skewness (s.e.)
name generator	total number of alters	D, v	0	30	12.36	4.27	0.35	0.33 (0.08)
	IQV of gender	D, d	0	1	0.78	0.26	0.33	-1.31 (0.08)
	IQV of education	D, d	0	1	0.67	0.22	0.33	-1.16 (0.08)
	standard deviation of age	D, d	0.58	26.99	12.88	3.94	0.31	0.00 (0.08)
	standard deviation of tie strength**	D, d	0.00	5.64	2.48	0.97	0.39	-0.15 (0.08)
	network density	D, d	0	1	0.43	0.32	0.74	0.38 (0.08)
	# items accessed	D, d	0	13	8.47	2.51	0.30	-0.66 (0.08)
	work related social capital	I, s	0	6	3.33	1.96	0.59	-0.67 (0.08)
position generator	highest accessed prestige	D, s	15	86	81.10	8.04	0.10	-2.72 (0.08)
	range in accessed prestige	D, d	0	71	62.41	11.45	0.18	-1.95 (0.08)
	# occupations accessed	D, d	0	30	15.00	5.64	0.38	-0.01 (0.08)
	average accessed prestige	D, s	15	72.14	51.71	6.84	0.13	-0.54 (0.08)
	total accessed prestige	D, v	0	1,522	779.58	303.46	0.39	-0.12 (0.08)
	high prestige social capital	I, s	0	7	4.46	2.29	0.51	-0.19 (0.08)
	low prestige social capital	I, s	0	6	2.67	1.63	0.61	0.12 (0.08)
resource generator	# items accessed	D, d	0	33	27.07	5.84	0.22	-1.02 (0.08)
	prestige / education related social capital	I, s	0	6	4.01	1.46	0.36	-0.79 (0.08)
	entrepreneurial social capital	I, s	0	3	1.84	0.93	0.51	-0.45 (0.08)
	skills social capital	I, s	0	4	3.44	1.01	0.29	-1.96 (0.08)
	personal support social capital	I, s	0	4	3.19	1.00	0.31	-1.08 (0.08)

* D = deductive measure, I = inductive measure; v = social capital volume, d = social capital diversity, s = specific social capital.

** tie strength calculated as the sumscore of items measuring perceived liking, trust and intensity of alter relationships.

*** coefficient of variation defined as st.dev. / mean.

Table 5: Loading pattern of Oblimin rotated principal component analysis of 20 social capital measures (Survey on the social networks of the Dutch (1999-2000); $N = 1,004$).

		component				
communalities	measure (*)	1	2	3	4	5
	high prestige/prestige diversity					
0.91	PG number of different positions accessed	0.91				
0.90	PG total accessed prestige	0.90				
0.66	PG range in accessed prestige	0.82				
0.81	PG access to high prestige occupations	0.73		-0.38		
0.78	PG highest accessed prestige	0.71		-0.47		
	network relationship extensity					
0.88	NG number of Name Generator items accessed		0.92			
0.83	NG work exchange relationships		0.92			
0.61	NG network size		0.70			
0.29	NG standard deviation of tie strength		0.42			
	lower prestige social capital					
0.93	PG average accessed prestige			-0.91		
0.89	PG access to low prestige occupations	0.62		0.77		
	concrete resources					
0.92	RG number of Resource Generator items accessed				0.87	
0.52	RG skills social capital				0.73	
0.56	RG entrepreneurial social capital				0.71	
0.64	RG prestige and education related social capital				0.58	
0.52	RG social support social capital		0.36		0.55	
	network diversity					
0.53	NG standard deviation of age					0.71
0.38	NG education diversity					0.55
0.43	NG network density		-0.30			0.52
0.34	NG gender diversity					0.49

* NG = constructed from Name Generator information; PG = constructed from Position Generator information; RG = constructed from Resource Generator information (see also Table 4).

Five shown components extracted with principal component analysis account for 63% of total variance.

Oblique Oblimin rotation performed with $\delta = 0$. Factor loadings < 0.30 not shown.

Table 6: Prediction with OLS regressions of personal income and personal prestige with and without social capital measures in standard mobility models (Survey on the social networks of the Dutch (SSND) 1999-2000; $N = 690 - 934$).

dependent variable		personal income					personal prestige**					
		B	beta	p	B	beta	p	B	beta	p	B	beta	p
Constant		2042		≤ 0.001	2289		≤ 0.001	39.15		≤ 0.001	41.09		≤ 0.001
sex	1 = male	1407	0.38	≤ 0.001	1425	0.38	≤ 0.001	4.47	0.13	≤ 0.001	4.28	0.13	0.000
education*	primary	113.4	0.03	0.455	204.7	0.05	0.195	-7.21	-0.20	≤ 0.001	-5.45	-0.15	0.000
	tertiary	1326	0.36	≤ 0.001	1069	0.29	≤ 0.001	11.85	0.35	≤ 0.001	9.48	0.28	0.000
father's prestige**		2.851	0.03	0.411	-1.042	-0.01	0.772	0.13	0.14	≤ 0.001	0.09	0.10	0.002
high prestige social capital					297.9	0.16	≤ 0.001				2.83	0.17	0.000
network extensity social capital					-80.76	-0.04	0.231				0.96	0.05	0.080
low prestige social capital					-337.2	-0.18	≤ 0.001				-2.07	-0.12	0.000
resource social capital					-52.70	-0.03	0.429				0.94	0.05	0.081
relationship diversity social capital					8.270	0.00	0.896				-0.12	-0.01	0.808
R^2		0.27			0.32			0.32			0.37		
R^2_{adj}		0.27			0.31			0.32			0.37		
df		4/745			9/681			4/930			9/800		
F		68.57			35.29			108.4			51.17		
p		≤ 0.001			≤ 0.001			≤ 0.001			≤ 0.001		

* reference group: secondary education

** Retrieved with standard codes for occupations of the Dutch Central Bureau of Statistics (CBS, 1992) and linked to Sixma and Ultee's 1992 prestige measures (Bakker et al, 1997).

Table 7: Prediction with logistic regressions of knowing someone that helped find the respondent's current job or house, with and without social capital measures in standard mobility models (Survey on the social networks of the Dutch (SSND) 1999-2000; $N = 808 - 958$).

dependent		knowing someone that helped find job				knowing someone that helped find house			
Constant		-1.441	≤ 0.001	-1.83	≤ 0.001	-0.854	0.001	-1.057	≤ 0.001
variable		B	p	B	p	B	p	B	p
sex	1 = male	0.174	0.243	0.04	0.814	0.090	0.539	0.093	0.571
education*	primary	0.084	0.667	0.76	0.002	-0.016	0.931	0.359	0.101
	tertiary	0.049	0.786	-0.08	0.729	-0.070	0.693	-0.045	0.826
father's prestige**		0.007	0.135	0.00	0.501	-0.002	0.632	-0.003	0.583
high prestige social capital				0.09	0.359			0.024	0.777
network extensity social capital				1.34	≤ 0.001			0.496	≤ 0.001
low prestige social capital				0.11	0.274			0.079	0.393
resource social capital				0.15	0.145			0.068	0.476
relationship diversity social capital				0.18	0.086			0.123	0.177
Nagelkerke's R^2		0.01		0.24		≤ 0.001		0.06	
-2 log likelihood		1119.16		815.08		1140.98		937.18	

* reference group: secondary education

** Retrieved with standard codes for occupations of the Dutch Central Bureau of Statistics (CBS, 1992) and linked to Sixma and Ultee's 1992 prestige measures (Bakker et al, 1997).