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## Measurement of Individual Social Capital

### Questions, Instruments, and Measures

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The idea that social relationships can be conceptualized as potentially productive, “social” additions to personally owned resources has been welcomed as an attractive, explanatory mechanism in many areas of social and economic research. The assessment of resources embedded in social networks, potentially available to individuals or the larger community as a whole, has gradually become an established extension to conceptual models which may provide useful, additional explanations for many research questions with socio-demographic aspects. Although still enmeshed in debates about the meaning of “social capital”, health researchers are also gradually realizing the explanatory potential of this concept to health outcomes. However, the translation of this idea into valid and reliable quantification has proven to be cumbersome, as the number of leads that can be followed in matters of operationalisation and measurement have proved labyrinthine; this has resulted in many incomparable measures and instruments (Flap, 1999, 2004).

Conceptualized in its individual form, social capital refers to all possible kinds of resources potentially owned by social network members, which may become available to a focal individual as a result of mutual investments in a shared past, of which the social relationships with these network members form evidence (Van der Gaag & Snijders, 2004). A definition of social capital at this individual level remains quite close to its original analogy with more traditional notions of financial and material “capital”, which have been developed and accepted in the academic world for more than 200 years (see e.g. beginnings by Quesnay, 1766) – the idea that relationships can be invested in and form “capital” that may harvest returns in the future is, similar to human and cultural capital, directly derived from economy. Perhaps this is the reason that when defined at the individual level by leading scholars (Bourdieu, 1980; Burt, 1992; Flap, 1999, 2004; Lin, 2001), social capital shows much less variation in the number and nature of dimensions specified than collective level social capital, where large differences between various conceptualizations are prevalent (Coleman, 1988; Putnam, 1993).

For the development of systematic, comparable social capital measurement instruments, the perspective of individual level social capital offers the most simple and clearly defined units of measurement – a focus on the individual avoids the common interpretation problems in analyses that stem from the use of

aggregated data, in which the problem of “modifiable area unit” may be encountered. The methodology of individual social capital research is essentially based on social network research, a well-established research area within which many insights for operationalization, and tools for data collection have been readily developed.

In this chapter, we aim to provide an overview of current methods and instruments for the measurement of individual social capital, and to the various methodological concerns that shape these methods. A first section introduces research questions and theoretical issues that shape the desired characteristics of social capital measurement. A second section discusses ways to construct social capital indicators from available data. A final and third section discusses the three main measurement instruments for individual social capital currently available: the name generator, the position generator, and the resource generator. As an illustration of advanced measurement in individual social capital research, we conclude the chapter with an example from a recent study using the resource generator instrument for a UK sample.

## 2.1. Questions That Shape Measurement

The use, design, and quality of social capital measurement can only be judged when its eventual applications are made explicit. Disregarding any specific, topical domains such as the job market, status attainment, personal well-being, health issues, etc., social capital research questions can be categorized into three main issues.

The first and most important of these is that individual social capital research considers an inequality question, based on the presumption that people equipped with “better” social capital will succeed better in attaining their goals (Flap, 2004; in the section “measures” we will further specify which characteristics of social capital could be considered “better” social capital). Generally, four explanatory mechanisms for this hypothesis are specified. Social network members and their resources are expected to be helpful in goal attainment because they 1) significantly add to an individual’s collections of personal resources, such as his cultural, human, material, and political capital (e.g. the social network may provide more useful information about jobs than can be gathered by an individual on the market), 2) provide unique resources that cannot be produced or purchased to satisfaction individually (e.g. love, friendship, emotional support, and opportunities for reproduction are poorly available on the market), 3) may actively provide help without asking (e.g. by means of recommendations), and 4) form the identity of one’s social network to the “outside world”, which may work as an advertisement for an individual (Lin, 1999a, 2001; Van der Gaag, 2005:40).<sup>1</sup> Summarized, the

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<sup>1</sup> Each of these mechanisms also provides unique forms of *social liability* – a term proposed by Leenders and Gabbay (1999) to identify negative experiences specifically caused by social network members. This chapter does not explicitly discuss such negative sides to social capital.

general issue regarding social capital is to investigate its *productivity*, and shed light on the question whether social networks are actually helpful in attaining individuals' goals.

Social capital is a complex, latent construct with several dimensions: in its individual form it refers to social relationships with alters<sup>2</sup> with different personal characteristics, various social resource collections, and, in some lines of social capital research, also patterns of relationships between network members (network structure). Therefore, a second, main research issue considers the question which configuration, which part, or which resource domain of social capital is productive in a certain context. Empirical findings have shown that to find a job, or attain higher social status through one's social network, social capital should be specific; it is necessary to know the right people with the right resources in order to climb the social ladder (Flap & Völker, 2001; Lin, 1999b). On the other hand, in order to find a house, or to enjoy company in general, rather unspecific social capital (as indicated by having a large social network) seems to be sufficient. Apparently, the resources responsible for such outcomes, which concern any member in the population, may successfully be passed on through any network member (Van der Gaag & Snijders, 2003; Van der Gaag, 2005:191–194). Summarized, not all kinds of relationships and resources represented by social capital are important at the same time, and specific configurations of these have distinct roles in its productivity in distinct contexts. These types of questions can therefore be labeled as investigations about social capital's *goal specificity* (Flap, 1999, 2002). As yet, knowledge about which social capital dimensions are responsible for any productivity is still fragmented.

If some configuration of social capital is productive for individuals in a certain context, this also implies decreased opportunities for those lacking it, and reproduction of inequality through the use of social capital (Flap, 1991, 2004; Lin, 2001:99–124). Therefore, a third main social capital research issue is the *identification of advantaged and deprived groups*, or the question how social capital is distributed over the general population (Flap, 1991, 2002, 2004). Eventually, studies addressing this issue may provide the translation of social capital research into future policy advice.

Making these research questions explicit is necessary because these directly shape social capital measurement at the level of operationalization and indicator construction. As will be discussed in the next section, so far many researchers have operationalized social capital into single, and rather unspecific indicators of “something useful about the social network”. Social capital research in exploratory stages, aimed at uncovering *the existence* of a relationship between individual social capital and its productivity, may indeed harvest meaningful, if not very specific, results from using a single indicator. However, the desire to identify *which*

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<sup>2</sup> In ego-centered social network research, the focal individual of a social network is denoted as “ego”, whereas any, unspecified social network member is denoted as an “alter”. For reasons of fluidity, we also use these terms throughout this chapter.

*part or quality* of social capital is responsible for any effect directly requires the development of multiple social capital indicators, each tuned towards specific sub dimensions; the same is true for almost all questions about the distribution of social capital over the population. Although some researchers have already emphasized the need to construct multiple measures for social capital at an early stage (e.g. Campbell, Marsden, & Hurlbert, 1986), most of them have not recognized the need to use multiple measures to measure social capital full yet.

## 2.2. Measure Construction

A latent, complex construct with several dimensions offers many opportunities for measurement – in the case of social capital perhaps even too many. Systematic research into its productivity and goal specificity has been slow in development and has seen the construction of many different, incomparable measures; often, these seem to have been developed based on available data rather than valid operationalization. The main cause for this is, however, that for many research domains more specific ideas about the productivity of social capital are difficult to establish firmly. Social capital investigators are often confronted with the fact that they do not really know which indicators could be essential to explain their studied outcomes: will an hypothesized effect stem from the presence of specific alters, types of relationships, social resources, the structure or size of the social network, all of these, or some of these aggregated into some useful combination? In the overview below, we discuss the potential value of several principles as a basis for social capital measures.

**Social network structure** Since individual social capital research gradually evolved from social networks research, it is not surprising that many authors have operationalized social capital from a structural point of view. Assessing the relative advantage of an individual's position in a social network, such social capital measures are calculated from data matrices about relationships in networks with clear boundaries, of which all members participate in research (see overview by Borgatti, Jones, & Everett, 1998). Many of these studies are investigations to which some form of entrepreneurship is the central topic, locating advantageous positions in environments characterized by competition. Therefore, most measures are based on the expected added value from sparse networks full of "structural holes" (Burt, 1992), containing few relationships between alters, and capitalizing on the idea of accessing diverse information at minimal costs. This preconception is not universally transferable to other research domains, such as personal health, in which social capital functioning within an environment conducive to trust and network closure can often seem more beneficial (Coleman, 1990). Single measures of network structure could serve as indicators in social capital productivity research, but these only refer to patterns of relationships, not explicitly to social resources, leaving explanations of any productivity effects rather implicit. However, the need for well-defined boundaries to local populations also reduces their usefulness, since research applications in the health domain usually require data

samples of general population in such settings opportunities for the calculation of structural social capital measures are severely limited.<sup>3</sup>

**Presence of specific alters** Other social capital measures are based on data from ego-centered social network research, which results in traditionally structured data sets. Most of these depart from theoretical notions regarding one single dimension of social capital; often, this concerns the existence of specific relationships or (groups of) specific alters. For example, Granovetter's (1973) classic argument about the strength of weak ties refers to the theoretical advantage of weaker relationships in the attainment of instrumental goals; subsequently, the proportion of weak ties in a person's social network can be used as a social capital measure. In a health context, where the attainment of expressive goals is often more central, indicators of the presence of strong ties in the social network (e.g. the proportion of strong ties among all relationships) could be considered useful. Such measures do not directly refer to social resources however, and their inclusion in explanatory models only tells us something very general about social network effects. Instead of relationships, another perspective is the identification of specific classes of network members. Since neighbors, friends, family members, etc. give access to specific sets of social resources (Felling, Fiselier, & Van der Poel, 1991), measures indicating the presence of alters with specific *roles* can serve as indirect social capital indicators. However, for insight into the productivity and nature of these social resources, additional data will be needed. Checking for specific role-players in social networks is also marked by the problem that not all productive roles are easily labeled – while these may indeed be potentially helpful it is, for example, not very productive to ask respondents to list “intriguing, vague acquaintances” in their network. Other specific classes of network members are formed by socio-demographic denominations, such as alters of specific age, gender or ethnicity. The nature of any specific social resources attached to socio-demographic positions also remains very implicit, and their beneficial effects as social capital are also possibly very population-specific. Since the theoretical meaning of such indicators can therefore be very different between social capital studies, their ad hoc inclusion usually also adds to the incomparability of findings. Only one indicator of social capital directly referring to specific, productive persons in the network has found systematic use – this is discussed in the section about the “position generator” measurement instrument.

Newer ideas for social capital indicators have moved away from any specific presumptions about useful categories and configurations of persons and relationships, and aim to characterize an individual's social network as a whole on more general, morphological grounds.

**Volume** One of the first notions used to characterize an individual's social capital was formulated by Bourdieu (1980) in terms of volume, or the total amount of

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<sup>3</sup> It is possible to calculate network structure indicators from ego-centered data by asking respondents whether, and how well their network members know each other (see section “name generator”). Such observations are unreliable, however.

social resources one has potential access to. Having remained largely intuitive, the idea is that having “more” social capital is productive as a result of all four mechanisms specified earlier, and adds to sustain the production of individual well-being. Following this argument, it would be logical to construct measures of social capital volume as cumulative indicators of “all resources” of “all members” of an individual social network. This meets with the problem that, apart from the fact that measurements of “all resources” of “all members” are susceptible to reliability and boundary problems, this would require the collection of extensive sets of data per individual (see section “name generator”). Therefore, measuring social capital volume to any detail has not become very popular in this form. The use of social network size as a social capital volume indicator, counting the number of different alters mentioned in an interview, can be seen as a more economical version, omitting resource measurements. This measure could be used as a single indicator to detect goal-*unspecific* effects of social capital, where any productivity stems from the sheer number of people one knows (see section “questions”). However, an extended rationale that the more people one knows, the more resources they will generally represent, and the more helpful the network will be, is perhaps a bit limited. Using measures of social capital volume in explanatory analysis also has limitations in terms of content validity. Theoretically, not all social capital available in a social network can or will contribute to the attainment of goals: most goals are attained by the use of personally owned resources,<sup>4</sup> and there will be many duplications of resources between alters. For most social resources, it is not the question how much or how many of them are present in the social network in order to be helpful (which is implicit in cumulative counting), but whether at least one instance of them is present at all. Summarized, multiple alters giving access to the same resources can be unnecessary, inconvenient, or normatively restricted to give help (Van der Gaag & Snijders, 2004).<sup>5</sup> An inventory of all resources may therefore require the collection of much superfluous information.

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<sup>4</sup> This argument gets even more important when we realise that because it creates an obligation to pay back services in the future, using social capital is also costly. For some goals, using social capital is also awkward for the seeker of help – it is quicker and more practical to clean one’s dishes oneself. Having social capital of some quality is therefore not an immediate, automatic blessing. For the attainment of most goals individuals are self-sufficient, either through the direct use of personal resources, or by buying solutions (goods and services) on the market. Only a small proportion of potentially accessed resources is used; when asked about the resource generator instrument, a number of participants commented that they would probably not ask for a number of the resources they had access to (Webber & Huxley, submitted).

<sup>5</sup> Several alters providing similar resources could be seen as “insurance” for a certain kind of help, because across relationships the opportunities for alters to actually provide help will vary over time. However, a possible lack of an opportunity to exchange help will only block very specific social capital transactions – usually, helping is without hurry. Furthermore, in many social networks there is an established order among network members who has to help first; help is therefore less easily mobilised from other than “usual” alters. Therefore, having social network “extras” in theory shows diminishing returns.

**Diversity** A logical further specification of social capital volume is its diversity: an account whether elements of different kinds are represented in the social network by at least one instance. Several authors have proposed the idea that specific resources and relationships can be located and accessed more successfully when more differentiation in alters, resources and relationships is present in the network, hence resulting in better social capital (Burt, 1992; Erickson, 1996, 2003; Flap, 1991; Granovetter, 1973; Lin, 2001; see also Erickson, in Lin & Erickson, forthcoming). Social capital diversity measures can be constructed in a straightforward way for relationships (e.g. variation in relationship strength or role), alters with specific characteristics (e.g. variation in gender, age groups, ethnicity, etc.), but operationalizations most valid in terms of social capital are those establishing the more explicit resource diversity of a person's social network (e.g. variation in alters' education, occupational prestige, etc.). So far, diversity measures are general, single social capital indicators making the most of their parsimony, incorporating robust content validity, while being sufficiently transferable to diverse social capital contexts to enable comparisons between studies.

**Social resources** While being the most obvious indicators for the concept of social capital, measures referring to resources of social network members were neglected for a long time. Perhaps the problem *which* of all possible social resources should be indicated by social capital measures, and how these should result in indicators, was central to this omission. The history of the concept of "capital" shows that its operationalization has always been complex, even when usually referring to relatively straightforward financial and material resources only (Hennings, 1987). For social capital, this question is even more complex, since the idea of "social resources" may refer to any collection of resources owned by network members. In the traditional categorization of capital used in the social sciences, social capital therefore includes the financial (money), human (education and skills), cultural (symbolic knowledge), and political capital (power) of network members. Investigations of the productivity, and especially of the goal specificity of social capital, should therefore ideally be capable of indicating which of these classes of social resources help individuals to attain their goals; hence a good social capital measurement instrument should contain separate indicators for each of these collections – within any research domain.<sup>6</sup> However, since the number of *possible* social resources that can be distinguished seems almost infinite, it is difficult to point out exactly which resources should be included in indicators of social resources from each of these classes.

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<sup>6</sup> A measurement instrument constructed this way will be capable of specifying the productivity of social capital as follows. If none of these indicators are significant predictors for a central outcome, there is apparently no effect of social capital. If one, or some of these indicators are significant predictors, social capital is productive and goal specific – productivity then results from knowing the *right* people. If all of these indicators prove significant predictors for an outcome with comparable magnitudes, there is a very unspecific effect of social capital – the effect may then result from knowing *enough* people.



There are two ways to deal with this problem. A first solution is the conversion of various “social resources” into a single currency – this is the basis of the “position generator” measurement model, where social resources are expressed as the job-specific prestige of network members’ occupations (see section “position generator”). A second option is to use some form of concretely listed, potentially useful social resources. Starting from a theoretical classification, for each capital collection some useful examples can be the basis for questionnaire items. This is the basis for the “resource generator” measurement instrument, which is explained in a separate section below.

### 2.3. Instruments

The translation of theoretical presumptions about social capital measurement into questionnaire items meets with the problem that a general perspective on the wording of questions needs to be chosen. When we wish to understand the role of social capital in attaining outcomes at the personal level, it is important to distinguish between accessing and mobilizing social capital (Flap, 2004; Lin, 1999a) – after all, not all potentially accessed social capital is mobilized, and furthermore, asking respondents questions about whether they could access social resources versus whether they have used social resources potentially retrieves very different answers. Both ways of questioning bring along specific measurement problems.

When we ask questions about having *access* to certain social resources (such as the questions listed in Table 2.1), the quality of the data remains rather hypothetical. Answers to such questions may contain considerable unreliability, and in case of social capital, social desirability.<sup>7</sup> In addition, unused social capital is probably not as well memorized as used social capital – people who actively use their networks will more clearly remember the contents of their networks. Moreover, of many resources people do not know whether they are owned by personal network members, because they are context specific, not commonly encountered in social exchange, or knowledge about them is limited to intimate confidants. Furthermore, as discussed earlier (see section “volume”) measurement of a collection of unused social capital points towards superfluous measurements, because most of the potentially accessed social capital will never be used.<sup>8</sup> In predictive analyses, this eventually reduces amounts of explained variance in productivity and goal specificity questions.

Other, but more serious problems are encountered when we would ask respondents questions about the *mobilization* of resources only. Questions about the use of help from network members operate from a retrospective time perspective by definition. This introduces the need for a pre-specified time frame (e.g. use in the

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<sup>7</sup> Especially in an interview situation, respondents will want to avoid they are seen as “social losers”, and are eager to indicate they have access to a diverse social network.

<sup>8</sup> See note 4.



TABLE 2.1. Empirically determined domain specific cumulative social capital measurement scales for UK sample, based on a resource generator with stem question “Do you personally know anyone with the skill or resource listed below that you are able to gain access to *within one week* if you needed it?” (N = 295; sample of south London and Doncaster electoral registers); popularity and scale fit of individual items and scale diagnostics.

<b>Do you know anyone who.....?</b>		
<b>Domestic resources</b>	<b>% “yes”</b>	<b><math>H_i^a</math></b>
A17 – knows a lot about DIY	84	0.40
B3 – help you to move or dispose of bulky items	81	0.43
B4 – help you with small jobs around the house	88	0.58
B14 – get you cheap goods or “bargains”	53	0.54
B15 – help you to find somewhere to live if you had to move home	65	0.56
B16 – lend you a large amount of money	46	0.59
B17 – look after your home or pets if you go away	86	0.51
n = 276, $H^b = 0.52$ , $\rho^c = 0.78$		
<b>Expert advice</b>	<b>% “yes”</b>	<b><math>H_i</math></b>
A7 – has a professional occupation	88	0.60
A12 – knows a lot about government regulations	43	0.58
A13 – has good contacts with the local newspaper, radio or t.v.	18	0.46
B1 – give you sound advice about money problems	70	0.49
B2 – give you sound advice on problems at work	70	0.58
B8 – give you careers advice	50	0.52
B9 – discuss politics with you	59	0.52
B10 – give you sound legal advice	55	0.49
B11 – give you a good reference for a job	85	0.61
n = 266, $H = 0.54$ , $\rho = 0.83$		
<b>Personal skills</b>	<b>% “yes”</b>	<b><math>H_i</math></b>
A1 – can repair a broken-down car	72	0.34
A3 – is a reliable tradesman	76	0.39
A6 – is good at gardening	83	0.45
A9 – works for the local council	43	0.32
A11 – can sometimes employ people	56	0.36
A15 – knows a lot about health and fitness	65	0.36
n = 279, $H = 0.37$ , $\rho = 0.69$		
<b>Problem solving resources</b>	<b>% “yes”</b>	<b><math>H_i</math></b>
A4 – can speak another language	60	0.45
A5 – knows how to fix problems with computers	77	0.39
A8 – is a local councillor	23	0.54
B5 – do your shopping if you are ill	90	0.34
B7 – lend you a small amount of money	90	0.41
n = 287, $H = 0.42$ , $\rho = 0.60$		

<sup>a,b</sup> Loevingers homogeneity index indicating individual item fit in scale ( $H_i$ ) and scale homogeneity ( $H$ ) (see text)

<sup>c</sup> Scale reliability index as calculated by software MSP5 for windows

last three or six months), and may result in unreliability of data in terms of specific memory effects. In addition, the action of using social capital is an outcome of a decision process that is influenced by personal wealth (e.g. more wealth could make social capital less useful), the individual need for help in general (e.g. being of old age or ill health increases the need for support), and one's personality, including an individual's propensity to ask for assistance. Therefore, information about the use of social capital is not only unreliable to some extent, but also confounded by many other important variables.

In comparison, the mobilization perspective seems more problematic than the access perspective (Van der Gaag & Snijders, 2004). Therefore, we advise investigators to use highly standardized versions of questionnaires using the access perspective. Perhaps ideally, social capital measurement instruments would include questions from both perspectives; however, time and resources will often prevent inclusion in questionnaires. The development of social capital questionnaire forms has largely followed three models, which can all be adapted to both the access and use perspective on social capital.

### *2.3.1. Name Generator*

The oldest measurement tool for individual social capital stems from 1970s social network research. It comprises an extensive social network inventory performed with a combination of "name generator" and "name interpreter" questions. Originally designed for the estimation of social network size, and the identification of social network structure and contents, the method comprises two or three rounds of data collection. In the first "name generator" part, a systematic list of queries asks the respondent to mention names of persons he or she knows, which are recorded by an interviewer. A second, "name interpreter" part collects information about all alters listed in the first part, comprising the relationships with the focal individual and alter attributes, among which questions about any social resources embedded in these relationships. (A third, optional round is sometimes added to assess existing relationships between alters; for an example, see Flap, Völker, Snijders, & Van der Gaag, 2004).

This procedure was the main method of social capital data collection until the mid 1990s and still is the staple instrument for studies of social network structure. While various types of name generating questions have been tested (e.g. Van Sonderen, Ormel, Brillman, & Van Linden van den Heuvell, 1990), the "exchange" type name generator proposed by McCallister and Fischer (1978) was eventually most widely used; its most famous example is the single "core"-network identifying item "with whom do you talk about personal matters?", recurrent in annual rounds of the US General Social Survey (Burt, 1984; Marsden, 1987; for various early forms see Marsden, 1990).

For social capital research, the name generator / interpreter combination can provide very detailed social network and social capital information. It is the only social capital measurement instrument that identifies single alters and their various attributes, which enables the study of individual network structure,

relationship-specific attributes and relationship multiplexity – research issues closely related to social capital. The wealth of possible information collected with this tool has also led to an abundance of differently calculated social capital measures (see section “measures”).

The costs of data collection with name generators can be high. Dependent on the limits set to the allowed number of alters to be mentioned in response to each question, interviews can become lengthy and repetitive when large networks are encountered, and many interpretative (such as social capital) questions are added. Even though this specific part of the information is usually later deleted, some respondents also become suspicious when asked to identify their network members. Moreover, the central idea of making a complete resource inventory of individual social networks theoretically retrieves much superfluous data (see section “volume”). The flexibility of the design of name generator / interpreter sets has led to many different versions. Although several name generator questions have become relatively standardized, there is no general agreement on which questions to include for alter identification in social capital studies. Therefore, results of social capital studies using name generators are often difficult to compare.

### 2.3.2. *Position Generator*

A measurement method focusing more on the presence of social resources than relationships in networks is the “position generator” (Lin & Dumin, 1986; Lin, Fu, & Hsung, 2001) – an instrument deliberately designed to cover social capital in the “general” life of the modern Western individual, without considering specific areas of goal attainment, life domains, or subpopulations. A position generator typically asks about a systematic list of 10–30 different occupations whether the respondent “knows” anyone having this occupation; subsequently, it is checked whether people in these positions are known as family members, friends, and acquaintances. Social capital data from the position generator are based on the idea that the occupations of network members represent social resource collections that can be quantified with job prestige measures. Based on a model of a hierarchically modeled society, following Lin’s theories of social resources and social capital (Lin, 1982, 2001), the most important underlying assumptions of this measurement model are that having access to persons with high-prestige occupations gives 1) access to large resource collections, and 2) such alters may exert important influence in their (second-order) social networks.

The position generator instrument has been consistently applied in research since its first publication, and has gradually become a popular measurement instrument in individual social capital research (for an overview of recent research see Lin & Erickson, forthcoming). The construction of social capital measures from position generator data has developed into largely standardized sets; three measures directly derived from Lin’s social capital propositions (Lin, 2001:61–63) are most frequently used in research: *highest accessed prestige* is an indicator based on the hypothesis that accessing high prestige network members leads to the generation of higher returns (Lin, 2001:62). Two other position

generator measures are indicators of beneficial diversity (see “measures”): *range in accessed prestige* is calculated as the difference in prestige between the highest and lowest occupation accessed, while *number of different positions accessed* is the total number of different occupations in which a respondent knows anyone.<sup>9</sup>

Because it takes much less interview time than sets of name generators and name interpreters, the position generator is more respondent-friendly. Moreover, since this measurement model is firmly rooted in theory, the logic and theoretical rigor behind its operationalization enables a systematic development of versions for every society in which occupations, occupational prestige or job-related socioeconomic indices have been catalogued. These characteristics make the instrument appealing for systematic comparisons of returns to social capital between populations. However, although its aim is to be “content free” (Lin, Fu, & Hsung, 2001), position generator data rather emphasize the identification of social capital productive for instrumental use: accessing social prestige is not relevant for every social capital question (e.g. receiving emotional support from a surgeon is not better than from a cleaner), and alters without any identifiable job prestige can still be very relevant and useful social capital (e.g. home-makers have no official occupation or job prestige, but are essential network members to many people) (Van der Gaag, Snijders, & Flap, forthcoming). Especially when applied in the domain of health studies, the validity of position generator data may therefore show some systematic shortcomings.

Using position generator data for research into the goal specificity of social capital is difficult. The amalgamation of social resources into social prestige measures prevents the design of multiple indicators that each refer to specific social resource collections. One way to construct more specific indicators is to establish separate indicators for the financial and cultural resources attached to each of the included occupations, which can subsequently be used as social capital sub-dimensions (see dimensional analyses in Flap & Völker, 2001; Webber, 2007). Another is to specify the positions for male and female network members separately (Erickson, 2004).<sup>10</sup>

Position generator data are liable to some problems regarding their validity and reliability. Ideally, respondents say “yes” to included positions because they actually know someone in a specified occupation. However, respondents can also do so when this occupation only somewhat resembles the occupation of someone they know,

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<sup>9</sup> Some of these measures show little variation in scores, especially when few items (<15) are included in the instrument. Less often used position generator measures without this disadvantage are the *average accessed prestige* (introduced by Campbell, Marsden, & Hurlbert, 1986), calculated as the mean of the prestige of all occupations in which the respondent knows anyone, and *total accessed prestige*, a social capital volume measure, calculated as the cumulative prestige of all accessed occupations (Boxman, Flap, & Weesie, 1992:47–48; Hsung & Hwang, 1992).

<sup>10</sup> A third method to construct more specific measures from position generator data is the performance of latent trait analyses on the sets of items (Van der Gaag, 2005:ch.6; Van der Gaag, Snijders, & Flap, 2006). This method is further explained in section “resource generator”.

while both could be rated at various levels of job prestige (e.g. “community worker”, “civil servant”, and “member of armed forces”) (Webber, 2007). “False positive” answers can be given when people interacted with only professionally are mistaken for personal network members (e.g. teachers, doctors, members of clergy, sales people, and directors of firms should not be included as positions). Some occupations may sound too salient to confess not to know anyone having it (e.g. artists or managers) while this is not the case. Some studies have shown that people are only vaguely aware of the actual professions of their network members (Laumann, 1969). Lower educated respondents sometimes do not fully understand the question asking to imagine occupations and “fill” them with people they actually know. In a recent UK validation study, participants were however found to unambiguously refer to persons they actually knew in specified occupations, which showed good to excellent test-retest reliability (Webber, 2007).<sup>11</sup>

### 2.3.3. *Resource Generator*

The “resource generator” (Snijders, 1999; Van der Gaag & Snijders, 2005) offers a new development in measuring social capital by using a “checklist”: in an interview situation, access is checked against a list of useful and concrete social resources, for which exchange is considered acceptable (see Table 2.1). This method combines the economy of the position generator with the content validity of the name generator / interpreter method, because of its vivid measurement of social resources. In particular, when potential respondents are involved in the construction of the instrument, a valid list of relevant resources can be readily obtained and the questions can be phrased clearly to obtain a reliable response (Webber and Huxley, Submitted).

Some methodological issues need further study. While its data are concrete and its administration is quick, resource generator items have validity problems similar to the position generator – of many social resources it is unknown how much people actually know about their social network members. Furthermore, the inclusion of actual resource items in instruments is difficult to achieve with any theoretical rigor. The examples of social capital included in the instrument need to be potentially productive, exchangeable, acceptable to ask for, and memorable for the respondent. Since most of these characteristics are culturally dependent, developed versions of resource generator instruments are strongly bound to a specific population. Another problem proves to be that the popularity of the items is rather high: respondents very easily give an affirmative answer to questions whether they could access resources in their social networks; this also indicates susceptibility for socially desirable answers (Van der Gaag & Snijders, 2005).

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<sup>11</sup> Occupations can also prove to be unsuitable for inclusion in a position generator because they are not very well known in the general population, such as “academic researcher”, “laboratory technician”, and “fishmonger” (Webber, 2007).

The construction of single social capital indicators from resource generator data can proceed in a theory-guided fashion (a single volume/diversity indicator can be constructed from its data as the sum score of access to all different items, whereas multiple indicators could be constructed for all sub domains included in its items), but the data are also suited for an empirical construction of measures (Van der Gaag & Snijders, 2005). This method comprises the construction of population-specific sets of multiple, domain-specific social capital measures by dimensional analysis of data. The idea behind this is that by checking the associations between all included items the latent structure of social capital is identified for a specific population, in which groups of strongly correlated items point towards the existence of separately accessed social capital domains. Since social capital data are typically of an ordinal nature, factor-analytic models such as e.g. Principal Components Analyses (designed for use with normally distributed data of at least 5 categories) are generally not suitable to accomplish such dimensional reductions. Instead, models from Item Response Theory are more appropriate (see e.g. Van der Linden & Hambleton, 1997).

The Resource Generator-UK (RG-UK) (Webber & Huxley, Submitted) provides a good example of such an analysis. The content validity of the items and questions for this instrument was established through a qualitative process of focus groups and an expert panel. This resulted in a pool of 35 usable social resources items which were used to explore the social capital domain structure of this population. Explorative analyses were performed using Mokken scaling (Mokken, 1997), a non-parametric item response theory method that aims to find robust and one-dimensional scales within sets of items. It begins by taking pairs of items with the strongest associations and continues by gradually including other well-fitting items until a scale has been formed that does not improve any further when other items are added.

Cumulative scale analyses was performed using MSP5 for Windows (Molenaar & Sijtsma, 2000). This uses Loevinger's  $H$ -coefficients (Loevinger, 1947) to express the fit of specific items within a scale and for the homogeneity of the scale as a whole. Uncorrelated items produce values of  $H = 0$ , whereas perfectly homogenous scales produce values of  $H = 1$ . Conventionally, scales with  $H \geq 0.3$  are useful,  $H \geq 0.4$  are medium strong and  $H \geq 0.5$  are strong scales. The Mokken scaling method allows for each item to appear in only one scale. The procedure eliminates items that do not fit within any scale if their item homogeneity ( $H_i$ ) falls below a set value, conventionally  $H_i = 0.3$  (Mokken, 1997). Further, a reliability coefficient ( $\rho$ ) is calculated for each scale. Values above 0.6 are conventionally taken as indications of sufficient reliability (Molenaar & Sijtsma, 2000).

Data for scaling and item reduction in the RG-UK was obtained from a postal pilot survey of individuals on the electoral register in south London and Doncaster in south Yorkshire ( $N = 295$ ). The 27 items together form a homogeneous scale ( $H = 0.37$ ) with high reliability ( $\rho = 0.89$ ). The RG-UK scale and its sub-scales have good test-retest reliability (full validity and sample details are reported elsewhere) (Webber & Huxley, Submitted). Using explorative Mokken

scaling, four consistent internal domains were found within the instrument, each referring to a distinct dimension of an individual's social capital (Table 2.1). Firstly, the domestic resources scale refers to resources that may be required to assist daily living and improve one's living conditions. These are quite common resources with four of the seven being accessible to over 80% of this sample. Secondly, the expert advice scale contains skills that are important for the employment market or are associated with the domain of the professions. Empirically, this is the strongest scale ( $H = 0.54$ ,  $\rho = 0.83$ ). Thirdly, the personal skills scale draws together a range of attributes that are important for "getting the job done". It includes tradesmen, mechanics and gardeners, though a less obvious fit in this scale is someone who can employ others. Finally, a seemingly disparate group of items came together to form the problem solving resources scale. These could all be useful in difficult situations that could become very frustrating for individuals if they were not resolved.

Within-scale item correlations were positive and significant (Table 2.2). Table 2.2 groups the items within their scales in order of popularity, starting with the rarest resource in each scale. This shows that if one has access to someone who could lend a large amount of money (B16), one is more likely to have access to other resources within the domestic scale such as someone who could get cheap goods (B14) or could help one find somewhere to live if one had to move home (B15), for example. Similarly, if one knows someone with good contacts with the local media (A13) one is also likely to know someone knowledgeable about government regulations. The same is true for the other two scales. Moreover, since the scales have a cumulative character, individuals who have access to rare social resources are likely to also have access to more common social resources included in the same scale. Most of the items are correlated with items from other scales, though none is correlated with every other item. This is further evidence of the separate sub-domains of social capital that can be accessed through informal networks.

A further pilot tested for an association between these scales and common mental disorders such as depression and anxiety. Using postal questionnaires sent to a random sample of 1000 people on the electoral registers in the same two areas as mentioned above, 335 respondents completed the RG-UK and the twelve item General Health Questionnaire (GHQ) (Goldberg & Williams, 1988), a well validated self-completed instrument that assesses the likely presence of a common mental disorder (further details reported elsewhere) (Webber & Huxley, Submitted). Further study of the distribution of social capital sub-domains across the population illustrate that increasing age result in diminishing access to expert advice. Occupational status is an important variable across all sub-domains except domestic resources. Additionally ethnicity and likely presence of a common mental disorder also appear to be important variables (Webber & Huxley, in press: Table3).

On the GHQ, 27.3% ( $n = 91$ ) of the sample scored three or above, the threshold value for a probable common mental disorder. Table 2.3 indicates that looking after the home or being unemployed increase the odds of having a common mental disorder, whereas having a low status occupation appears to be a protective



TABLE 2.2. Inter-Item correlations of empirically determined resource generator scales (N = 295; sample of south London and Doncaster electoral registers).

Item	Scale 1: Domestic resources							Scale 2: Expert advice							Scale 3: Personal skills							Scale 4: Problem solving resources						
	B16	B14	B15	B3	A17	B17	B4	A13	A12	B8	B10	B9	B1	B2	B11	A7	A9	A11	A15	A1	A3	A6	A8	A4	A5	B5	B7	
<b>Scale 1</b>																												
B16	1																											
B14	<b>0.37</b>	1																										
B15	<b>0.44</b>	<b>0.39</b>	1																									
B3	<b>0.28</b>	<b>0.27</b>	<b>0.36</b>	1																								
A17	<b>0.24</b>	<b>0.20</b>	<b>0.23</b>	<b>0.23</b>	1																							
B17	<b>0.34</b>	<b>0.30</b>	<b>0.35</b>	<b>0.29</b>	<b>0.28</b>	1																						
B4	<b>0.26</b>	<b>0.33</b>	<b>0.29</b>	<b>0.31</b>	<b>0.45</b>	<b>0.42</b>	1																					
<b>Scale 2</b>																												
A13	ns	ns	0.13	ns	ns	ns	ns	1																				
A12	<b>0.32</b>	<b>0.22</b>	<b>0.28</b>	<b>0.17</b>	<b>0.22</b>	<b>0.12</b>	<b>0.12</b>	<b>0.25</b>	1																			
B8	<b>0.28</b>	<b>0.23</b>	<b>0.32</b>	<b>0.23</b>	<b>0.22</b>	<b>0.21</b>	<b>0.16</b>	<b>0.17</b>	<b>0.32</b>	1																		
B10	<b>0.27</b>	<b>0.26</b>	<b>0.26</b>	<b>0.24</b>	<b>0.21</b>	<b>0.13</b>	ns	<b>0.21</b>	<b>0.42</b>	<b>0.31</b>	1																	
B9	<b>0.29</b>	<b>0.21</b>	<b>0.33</b>	<b>0.17</b>	ns	<b>0.16</b>	ns	<b>0.16</b>	<b>0.42</b>	<b>0.45</b>	<b>0.44</b>	1																
B1	<b>0.32</b>	<b>0.23</b>	<b>0.33</b>	<b>0.24</b>	<b>0.26</b>	<b>0.17</b>	<b>0.17</b>	<b>0.16</b>	<b>0.37</b>	<b>0.33</b>	<b>0.35</b>	<b>0.32</b>	1															
B2	<b>0.34</b>	<b>0.34</b>	<b>0.34</b>	<b>0.33</b>	<b>0.23</b>	<b>0.29</b>	<b>0.17</b>	<b>0.12</b>	<b>0.40</b>	<b>0.54</b>	<b>0.36</b>	<b>0.36</b>	<b>0.50</b>	1														
B11	<b>0.24</b>	<b>0.22</b>	<b>0.22</b>	<b>0.22</b>	<b>0.19</b>	<b>0.21</b>	<b>0.17</b>	ns	<b>0.27</b>	<b>0.40</b>	<b>0.27</b>	<b>0.31</b>	<b>0.21</b>	<b>0.45</b>	1													
A7	<b>0.24</b>	ns	<b>0.28</b>	ns	0.15	0.15	0.12	0.12	<b>0.27</b>	<b>0.26</b>	<b>0.22</b>	<b>0.28</b>	<b>0.26</b>	<b>0.35</b>	<b>0.42</b>	1												
<b>Scale 3</b>																												
A9	<b>0.16</b>	<b>0.17</b>	ns	0.13	<b>0.18</b>	ns	0.13	<b>0.17</b>	<b>0.32</b>	<b>0.13</b>	<b>0.19</b>	<b>0.18</b>	ns	<b>0.21</b>	<b>0.17</b>	<b>0.16</b>	1											
A11	<b>0.26</b>	<b>0.26</b>	<b>0.24</b>	<b>0.26</b>	<b>0.25</b>	ns	<b>0.17</b>	<b>0.14</b>	<b>0.25</b>	<b>0.26</b>	<b>0.28</b>	<b>0.16</b>	<b>0.20</b>	<b>0.32</b>	<b>0.32</b>	<b>0.27</b>	<b>0.21</b>	1										
A15	<b>0.19</b>	<b>0.18</b>	<b>0.22</b>	<b>0.28</b>	<b>0.22</b>	<b>0.18</b>	<b>0.15</b>	<b>0.21</b>	<b>0.40</b>	<b>0.35</b>	<b>0.27</b>	<b>0.29</b>	<b>0.23</b>	<b>0.31</b>	<b>0.22</b>	<b>0.34</b>	<b>0.22</b>	<b>0.33</b>	1									
A1	<b>0.17</b>	<b>0.21</b>	<b>0.20</b>	<b>0.22</b>	<b>0.29</b>	<b>0.17</b>	<b>0.15</b>	ns	<b>0.19</b>	<b>0.21</b>	<b>0.19</b>	<b>0.17</b>	<b>0.14</b>	<b>0.13</b>	<b>0.17</b>	<b>0.13</b>	<b>0.15</b>	<b>0.23</b>	<b>0.22</b>	1								
A3	<b>0.21</b>	<b>0.19</b>	<b>0.23</b>	<b>0.31</b>	<b>0.34</b>	<b>0.16</b>	<b>0.15</b>	ns	<b>0.14</b>	<b>0.23</b>	<b>0.26</b>	<b>0.18</b>	<b>0.28</b>	<b>0.32</b>	<b>0.31</b>	<b>0.27</b>	<b>0.18</b>	<b>0.27</b>	<b>0.22</b>	<b>0.45</b>	1							
A6	<b>0.21</b>	<b>0.19</b>	<b>0.28</b>	<b>0.21</b>	<b>0.24</b>	<b>0.16</b>	<b>0.17</b>	ns	<b>0.13</b>	<b>0.19</b>	<b>0.15</b>	<b>0.18</b>	<b>0.18</b>	<b>0.19</b>	<b>0.24</b>	<b>0.27</b>	<b>0.21</b>	<b>0.23</b>	<b>0.37</b>	<b>0.23</b>	<b>0.31</b>	1						
<b>Scale 4</b>																												
A8	<b>0.19</b>	<b>0.16</b>	<b>0.21</b>	ns	0.14	ns	ns	<b>0.21</b>	<b>0.33</b>	<b>0.18</b>	<b>0.19</b>	<b>0.23</b>	<b>0.14</b>	ns	ns	<b>0.44</b>	<b>0.18</b>	<b>0.17</b>	<b>0.15</b>	<b>0.15</b>	<b>0.21</b>	<b>0.21</b>	1					
A4	<b>0.12</b>	ns	<b>0.18</b>	ns	<b>0.19</b>	ns	<b>0.13</b>	<b>0.32</b>	<b>0.28</b>	<b>0.22</b>	<b>0.28</b>	<b>0.22</b>	<b>0.26</b>	<b>0.24</b>	<b>0.25</b>	<b>0.23</b>	<b>0.16</b>	<b>0.21</b>	ns	<b>0.17</b>	<b>0.13</b>	<b>0.24</b>	<b>0.24</b>	1				
A5	<b>0.12</b>	ns	<b>0.18</b>	<b>0.15</b>	<b>0.22</b>	<b>0.12</b>	ns	<b>0.24</b>	<b>0.25</b>	<b>0.19</b>	<b>0.16</b>	<b>0.27</b>	<b>0.28</b>	<b>0.17</b>	<b>0.22</b>	<b>0.25</b>	<b>0.23</b>	<b>0.19</b>	<b>0.31</b>	<b>0.34</b>	<b>0.21</b>	<b>0.16</b>	<b>0.29</b>	<b>0.29</b>	1			
B5	<b>0.12</b>	<b>0.22</b>	<b>0.22</b>	<b>0.26</b>	<b>0.29</b>	<b>0.43</b>	<b>0.41</b>	ns	<b>0.19</b>	<b>0.15</b>	<b>0.14</b>	ns	<b>0.21</b>	<b>0.17</b>	<b>0.23</b>	ns	<b>0.15</b>	ns	<b>0.16</b>	<b>0.18</b>	ns	<b>0.16</b>	<b>0.16</b>	<b>0.16</b>	<b>0.16</b>	1		
B7	<b>0.25</b>	<b>0.28</b>	<b>0.26</b>	<b>0.12</b>	<b>0.26</b>	<b>0.26</b>	<b>0.20</b>	ns	<b>0.14</b>	<b>0.25</b>	<b>0.15</b>	<b>0.22</b>	<b>0.14</b>	<b>0.24</b>	<b>0.27</b>	<b>0.15</b>	ns	ns	<b>0.12</b>	<b>0.15</b>	<b>0.12</b>	<b>0.13</b>	<b>0.19</b>	<b>0.19</b>	<b>0.19</b>	<b>0.34</b>	1	

Pearson correlations: **p < 0.01**, p < 0.05

TABLE 2.3. Logistic regression models with predictive factors for common mental disorder<sup>a</sup> including none, one general resource generator social capital sum score measure, and four domain specific social capital resource generator measures (N = 335, sample of south London and Doncaster electoral registers).

Model	Variable	Odds ratio (95% CI)	p
<b>No social capital variables</b>  R <sup>2</sup> = 14.2%, $\chi^2(22) = 51.05$ , p = 0.0004	Looking after the home <sup>1</sup>	6.11 (1.83–20.45)	0.003
	Unemployed <sup>1</sup>	5.28 (1.04–26.80)	0.044
	SOC 7–9 <sup>1</sup>	0.18 (0.04–0.86)	0.032
<b>RG-UK total score</b>  R <sup>2</sup> = 17.3%, $\chi^2(23) = 51.80$ , p = 0.0005	Looking after the home <sup>1</sup>	4.58 (1.30–16.09)	0.018
	Age	0.96 (0.92–0.99)	0.012
	RG-UK total	0.93 (0.87–0.99)	0.029
	SOC 7–9 <sup>1</sup>	0.18 (0.04–0.91)	0.038
<b>RG-UK sub-scales</b>  R <sup>2</sup> = 18.7%, $\chi^2(26) = 55.73$ , p = 0.0006	Looking after the home <sup>1</sup>	5.54 (1.51–20.38)	0.010
	Age	0.96 (0.93–0.99)	0.017
	SOC 7–9 <sup>1</sup>	0.19 (0.04–0.95)	0.043

<sup>1</sup>Contrast group = SOC groups 1–3 (Office for National Statistics, 2000)

<sup>a</sup> Common mental disorder measured with twelve item General Health Questionnaire (GHQ) (Goldberg and Williams, 1988), GHQ; dichotomisation scoring under 3/3+

Only variables significant at p<0.05 tabulated

factor in this sample. When access to social resources is included in the model, it becomes apparent that the volume or diversity of accessible social capital is a protective factor for mental health. However, when the total scale score is replaced by the four sub-domain scores, this effect disappears. This suggests that in this context social capital has an unspecific effect, and that having access to a diversity of social resources across all domains, resulting from having an extensive social network, is important for the prevention of mental disorder;.

As this data is cross-sectional it is not possible to determine the direction of any causal relationships between these variables. However, there are a number of possible explanations. An absolutely low level of resources may act as a vulnerability factor in the development of common mental disorder. Also, the loss of previously accessible and valued resources may increase vulnerability or act as a trigger for an episode. It is also possible that access to resources may diminish as common mental disorders persist, possibly as a result of diminished social interaction and exchange through social withdrawal.

Further work is underway in which the RG-UK is being used in a cohort study of people with depression in London. Studies of this nature will further our understanding of how access to social capital affects recovery or influences the chronicity of illness. The hypothesis being tested is that those with access to a larger number of resources will have a faster rate of recovery over a six month period. Early results

from this study suggest that people access resources within their networks after the acute phase of illness has passed. These resources may assist recovery in a number of ways. In addition to the various forms of advice, help and support that can be obtained from informal social networks, people with chronic illnesses may improve their employment or promotion prospects by having more resourceful networks which, in turn, may assist recovery, for example (Webber, 2005). It will be instructive to learn how the different domains of social capital contribute to recovery.

## 2.4. Conclusion

Recent methodological research has shown that measures calculated from different social capital measurement instruments indicate very different aspects of social capital, and that separate measures from separate instruments also have different predictive value for different outcomes of social capital. Therefore, the selection of measurement instruments should be careful, and according to specific research interest, for which a general research strategy has been proposed (Van der Gaag, 2005:181–205; Van der Gaag & Snijders, 2003). Researchers are therefore advised to use two social capital measurement instruments in questionnaires whenever possible: one instrument aiming to measure the presence of specific social resources, which may identify social capital sub domains and illustrate the usefulness of particular resources (such as the resource generator), and one instrument that is more structurally comparable to other studies (preferably the position generator).

Social capital measurement instruments to be used in health studies ideally need extensive pre-testing to ensure their validity and reliability in the population being investigated. When effects of the presence of network structure or particular alters and/or relationships are not specifically investigated, studies including name generators are not recommended for reasons of efficiency. Resource generators work best if they are sufficiently large to contain a number of sub-domains of social capital so that specific groups of resources can be identified as influencing the outcome being studied. If specific resources are identified as useful in a particular population for preventing illness or enhancing recovery from it, more specific interventions can be designed to maximize the availability of, or access to, them.

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