Measurement of individual social capital
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Chapter 3

Counting social capital

After a reconnaissance of research questions and the formulation of a general approach to the measurement of social capital (Chapter 1), and an overview of its various conceptual elements and their relationships (Chapter 2), this third chapter will focus on operationalisation. Its central question is how notions about the quantification of social capital should lead to useful measures.¹

3.1 Notions for counting

For the construction of measures for general individual social capital, it is desirable to include measurements of relationships, embedded resources, and the availability of resources from alters (see Chapter 1). One of the main problems is therefore how information about each of these very different elements should be featured in indicators usable in empirical research. To deal with this problem, previous operationalisations of social capital were based on notions that can be divided into three main categories. First, measurement of the presence of specific elements or characteristics of personal social networks, from which beneficial social capital effects are expected. Second, two notions about the more general morphology of an individual’s social capital, namely that either social capital volume or diversity are beneficial in goal attainment.

In this section, it is first considered how these notions may result in single measures for general social capital, and which of these may be the most fruitful for the research objectives set in Chapter 1. In later sections multiple measures will be considered.

3.1.1 Specific elements

The ideal way to construct social capital indicators would be to concentrate on counting the presence of elements in the social network from which it is known that they are productive in general, or for specific forms of goal attainment. Currently, this class of measures contains various candidates, which are all based on specific information about the productivity of social capital.

Granovetter’s (1973) strength of weak tie-argument (see Section 2.1.3) for instance is a straightforward basis for a social capital indicator: proportions of weak ties versus

¹Sections 3.2 and 3.3 of this chapter appeared earlier in Van der Gaag & Snijders, 2004.
strong ties in social networks, or the average strength of ties between ego and alters (Mitchell, 1969) have all been used as such. However, the theoretical advantage of weak ties is mainly based on their productivity in the attainment of instrumental goals. For expressive actions on the other hand, especially strong ties may be considered useful (see 2.1.3). Therefore, when the aim is to measure access to general social capital, measuring social capital by concentrating on weak ties or strong ties only is either too goal-specific or context-specific. And, it should be repeated, indicators of tie strength do not directly refer to access to social resources, but to social relationships.

Since network ties are very much specialised, more specific social capital measures could be constructed based on the presence of typical roles in the social network: different types and amounts of help come from different degrees of closeness, role, and different attributes such as gender (Wellman, 1981, 1999). Neighbour support is associated with short-term help where physical presence is required (such as borrowing things, help with small jobs), friends supply mainly emotional support, and family members are used to deal with various problems, but especially for long-term help (Felling, Fiselier, and Van der Poel, 1991). However, focusing measurements of social capital on the presence of specific roles has the drawback that not all roles are easily identified by role denotations (see section 5.1.4). In addition, ‘role’ measures also provide only indirect indicators for access to social resources.

An extension of this idea – the presence of specific alters with specific benefits – has been to focus on access to influential alters in one’s social network. Various authors introduced variations on the idea that high status others not only control rich resource collections and have more influence, but also have more strategic information because they usually have larger networks (for a concise review of arguments see Campbell et al, 1986; this idea is also central to Lin’s (2001a:64–65) strength of position proposition. Measures based on this idea included network-level assessments of highest education, prestige or income (Campbell et al, 1986; Sprengers, Tazelaar & Flap, 1988; Boxman, De Graaf, and Flap, 1991; Boxman & Flap, 1990). Currently, a measure indicating the highest upward reach within the social network is consistently used in research with the Position Generator instrument (Lin & Dumin, 1986; Lin, Fu, and Hsung, 2001; this instrument is further elaborated in Chapter 6). However, such social capital measures have the same disadvantages as measures of weak ties: they focus on links to resources that are beneficial for instrumental actions, neglecting those helpful for expressive actions. More explicitly, Lin (2001a:63) remarked that having only ties of high status does not meet many different life needs, and that support in the form of practical assistance may especially come from network members in lower positions. Moreover, Hurlbert, Beggs, and Haines (2001) suggested that access to network members with low prestige may also have specific merits: such alters are often more practically oriented, and may show specific resourcefulness in case of calamities.

The implicit rationale behind the assessment of influential alters in social networks is furthermore that ego will also use access to the best possible resources in the social network when he can choose from all alters. It is doubtful whether this assumption is realistic: people do not always optimise, but often choose a solution to their problems that is ‘good enough’.

Summarised, as yet the information about the operationalisation of social capital with specific elements in social networks is largely confined to a specific context, usu-
ally focusing on instrumental actions. Therefore, in the next sections a more general, morphological approach is followed, that considers characteristics of the collection of an individual’s social capital as a whole.

3.1.2 Volume

One of the first quantitative notions of a beneficial general morphology of social capital was formulated by Bourdieu (1980) in terms of volume, or the total amount of social resources one has potential access to. From the perspective of Social Production Function theory (SPF) on individual goal attainment (see Section 2.3.1), a large volume of social capital can be understood as a stabilising factor. Individual needs fluctuate over time, dependent on the goals people set themselves. SPF theory postulates that psychological well-being can be sustained in these varying circumstances via the substitution of goals (to a limited extent) and the substitution of resources. Because a larger total volume of available resources offers an individual more opportunities for resource substitution, it follows that a larger volume of available resources will lead to better, sustainable attainment of personal goals.

In addition, the availability of personal resource collections is variable over time: human and cultural capital may grow (education) or deteriorate (lack of practice), and material belongings may also be gained or lost for various reasons. Because relationships are transient, the composition of the social network also varies over time (see Section 2.1). However, since the volume of social resources is in theory generally larger than the volume of personal resources (Lin, 2001a:44–45), a larger volume of social capital may especially be helpful in sustaining the production of individual well-being.

Measures resulting from the notion of volume can be based on network size, indicating the total number of relationships in an individual network, or on the volume of social resources embedded in relationships, which could be called a network inventory.

Network size

For a long time, the measurement of social capital focused on the quantification of social relationships rather than accessible social resources (Flap, Snijders, and Van Winden, 1996; Flap, 1999). Estimating the sizes of individuals’ social networks, or counting the number of others to whom a focal person is tied, has been one of the oldest topics in the field of social network research. A considerable amount of literature shows that the outcomes of such estimations vary widely, and are a direct consequence of the used definition of ‘knowing’ someone; this problem is known as the ‘network delineation or boundary problem’ (Laumann, Marsden and Prensky, 1983; McCarthy, Bernard, Killworth, Shelley, and Johnsen, 1997). Generally, the more weak ties can be mentioned in response to interview questions, the larger the resulting social network that is identified.

Estimations of average individual network sizes run from several thousands (1,500–5,000) of different persons who can be recognised by name or face (De Sola Pool, 1978; Freeman & Thompson, 1989; Killworth, Johnsen, Bernard, Shelley and McCarthy, 1990), and can be characterised as (at least) ‘acquaintances’; these estimations show considerable variations since they are often extrapolations from very different sample types. However, since relationship contents remain largely unknown in these studies, such numbers have
little meaning in terms of social capital indices. Estimations of networks sizes including network members who would possibly perform minimal favours (forwarding information about further network links) are decidedly smaller, and average a couple of hundreds (135–200) of ‘acquaintances’ (Killworth & Bernard, 1978; Killworth, Bernard, and McCarthy, 1984).

Usually a certain core group of 20 to 50 people have ‘significant’ relationships with ego, and are regularly returned to (Wellman, 1981); these estimations vary over sociodemographic subgroups, however. For most people, the numbers of ties identified in personal networks measured with questions asking for possible exchanges of sets of resources typically amount to less than 100, such as Fischer (1982a) found for Californians (2-70 alters) and the INSEE study (as reported in Degenne & Forsé, 1999:20) for the French population (0-80 alters); about the same numbers are found for the Dutch population in the present study (see Chapter 5). When only ‘core relationships’ in networks are investigated with questions such as “With whom do you talk about personal matters?”, or “Who are your best friends?”, usually 2 to 3 strong, confidential, and supporting ties are found (Marsden, 1987; Degenne & Forsé, 1999:20; also see Chapter 5, Table 5.1).

Network sizes are usually estimated with Name Generator survey questions, which include a specific elicitation cue to come up with alter names (this methodology is further elaborated in Chapter 5). Not only have these been used within very different frames of reference (with various definitions of ‘knowing’ persons, resulting in the various network sizes reported above), but also within such frames of reference with varying contents (referring to e.g. vary different collections of exchanges or other cues to identify alters). Therefore, it has been very difficult to standardise network size measures. A more serious shortcoming of network size as a social capital indicator is a lack of content validity: the notion that each alter gives access to resources remains indirect, as the number of people one knows does not have much theoretical meaning for the implicated available resources – especially when we want to know which resources.

The overall relationship between network size and individual goal attainment is not simply linear, as the size of a social network does not have the same meaning within every context: attributes of alters will play a role, and there will be a law of diminishing returns for the raw number of alters (this will be further elaborated in Section 3.2.1). An additional problem with large networks is that an efficient mobilisation of all included resources may be problematic. Many social resources in such large networks may remain ‘hidden’ because they are difficult to locate, and also because there usually is an order in which network members are mobilised for specific problems, which can make additional network members offering similar resources effectively redundant (Bruckner & Knaup, 1990).

**Network inventory**

An improvement over network size as a social capital volume indicator is the inclusion of social resource indicators in measurement procedures. In a number of studies (Boxman, Flap, and Weesie, 1992; Flap & Boxman, 1991, 2001; Hwang & Hsung, 1992; Snijders, 1999) this idea was executed by forming a single, cumulative measure of all social resources in the network, which can be called a *network inventory*: 
SC = \sum_{i=1}^{n} \sum_{j=1}^{m} r_{ij}p_{ij} \tag{3.1}

where

\( SC \) = the overall quantification of an individual’s total social capital

\( n \) = the number of alters in this individual’s social network

\( m \) = the number of different social resource types that are distinguished

\( r_{ij} \) = a quantification of the resources within type \( j \) of alter \( i \)

\( p_{ij} \) = the probability that alter \( i \) will give ego access to his resource collection \( j \).

In this definition, it is assumed that \( m \) meaningfully different resource types can be distinguished. This is not a simple question however, and in Section 3.3 several ways will be discussed how this could be performed. It is also possible to restrict \( m \) to 1, for example when all social resources are operationalised as the occupational prestige of alter \( i \) – this option is used with the Position Generator instrument (see Chapter 6).

Not all alters that own resource \( j \) will decide to make it available to ego when asked. Their willingness to give access to resource \( j \) will be dependent on the perceived reciprocity in their relationship to ego, connected to its shadows of future and past (see Section 2.2.2). In addition, this willingness is resource specific. Even closer alters will not automatically want to share any kind of resource: sharing a pleasant evening is not the same thing as borrowing large amounts of money. The specific relationship between alter \( i \) and ego is therefore an alter- and resource-specific willingness to give access to resources, and the availability of resources \( p_{ij} \) is therefore dependent on both alter \( i \) and resource ‘type’ \( j \). This willingness \( p_{ij} \) can be modelled via one or more attributes of tie \( i \) (see Section 2.1.3).

The main disadvantage of network inventory measures as social capital indicators is that many alters can give access to about the same kinds of resources, and that having access to additional alters with similar resources shows diminishing marginal returns. This problem will be returned to in Section 3.2.1.

### 3.1.3 Diversity

The most often used notion to quantify social capital is that of diversity: having access to a diversely composed collection of social ties and social resources increases the likelihood of accessing useful social capital (Flap, 1991:6182; Erickson, 2003). In addition, Flap (1991) extended on this with the idea that especially connections to mobile others may amplify ego’s mobility because they can introduce him or her to new, diverse others. From the

\(^2\)However, since collected data about social ties are typically resource-unspecific, \( p \) is usually not distinguished for every \( j \) and will effectively be limited to \( p_i \).

\(^3\)When included in a more detailed study of social capital exchanges, the measurement of resource-specific opportunity costs for exchanges (see Section 2.2.3) could be considered as an extra determinant of \( p_{ij} \).
perspective of Social Production Function theory the notion of diversity can be understood as a more specific and improved version of the notion of volume (Section 3.1.2). Large volumes of resources may offer better opportunities for goal and resource substitution and the sustenance of well-being, but may also contain many similar resources, to which a law of diminishing returns applies. It is more likely that individual goal attainment will improve when more diverse resources are accessed, because then there is a higher probability that the right resources can be accessed for specific actions.

Furthermore, since it is more likely that a specific resource is present in more diverse collections of social resources, it can also be hypothesised that a diverse social capital may be especially beneficial for actions in which social capital needs to be very goal specific. Having access to diverse social resource collections may also have more long-term, positive effects. Coser (1975) suggested that people interacting with many different others also develop useful personal resources, such as greater skills in the use of abstract language, and a greater sense of personal autonomy. Erickson (1996) showed that more network diversity may lead to more cultural variety, which in turn may lead to even more network variety.

For individuals, an investment in diverse networks is useful, since the future is uncertain and one never knows what resources are going to be needed in the future. For example, individuals may want to invest in dissimilar and diverse relationships because they don’t want to be caught on the wrong side, and need affiliations with various parties (Flap, 2004). The cognitive, positive evaluation of access to a varied social network and associated investments is likely to encountered only among individual with higher education. Investment in a very diverse network will mean that a lot of effort has to be made to keep it going, since the creation and maintenance of relationships with dissimilar alters is more costly (see Section 2.1.4); this means that higher expenses are needed to keep more diverse networks going. People with higher incomes and higher levels of education have larger, more diverse, and more open networks (e.g. Campbell et al, 1986; Fischer, 1982a; Laumann, 1966, 1973; Lin & Dumin 1986; Marsden, 1987; Van der Poel, 1993; Erickson, 1996). Two explanations are generally brought to bear for this effect. First, higher educated individuals work and live in less overlapping social contexts, so that several disjunct network fractions can be formed (Flap, 1991). Alternatively, higher educated persons can simply better afford such networks, by owning resources that can be spent on the maintenance of such diverse relationships.

The notion of diversity has been at the basis of many social network and social capital measures. Older social capital indicators can be used as proxies for social capital diversity. Since weak ties lead to more diverse social resources, the number of weak ties in a network is also an indicator of diversity. Because larger networks tend to include more diverse relationships and more diverse resources (Campbell et al, 1986), network size could also be considered a proxy for diversity. However, estimations of personal network size require considerable efforts, so this proxy is only interesting for existing data, provided validations to other indicators are also present (see e.g. Chapter 5). Earlier operationalisations of social capital diversity also include measures of network composition and structural measures.
Network composition

An early idea for the operationalisation of diversity in social networks was to focus on network composition. In this vein, several authors discussed a number of ideas for measuring network range, indicating the presence in the network of several alter and/or relationship attributes (Campbell et al., 1986; Huang & Tausig, 1990). The idea behind the construction of many network range measures was the assumption that varied social relationships would also give access to varied resources embedded in the social network. However, measures indicating embedded resources were usually not explicitly constructed.

A large group of network range measures consists of indicators of the heterogeneity of alters’ attributes: gender, age, education, ethnicity, occupational prestige, and employment status. Alternatively, characteristics of relationships with alters can be aggregated into e.g. network fractions (percentages) of kin relationships, acquaintances and friends, the geographic dispersion of (specific) relationships, the variation in tie strength, mean duration of the contacts, content multiplexity, role multiplexity (or ‘multi-strandedness’), or the exchanges that flow through relationships as counted in numbers of relational contents present in the network (see Chapter 8). Specific versions of such network range measures focused explicitly on the presence of alters with attributes different from those of ego him-/herself (such as the proportion of alters with different gender, with different work, with different ethnicity, etc.), which could be especially interesting for the investigation of social resources in instrumental action (see Section 1.3.3).

The computation of diversity measures for alter and relationship characteristics has been performed as network proportions (such as network fractions of men and women), standard deviations (such as variation in age or occupational prestige) or true ranges (e.g. differences between minimum and maximum values of alter ages). For attributes with a nominal level of measurement various diversity indices have been used (Katzmair & Neurath, 2003); relatively often used are Simpson’s (1949) index of diversity, and the standardised index of qualitative variation (IQV) introduced by Mueller and Schuessler (1961:171-179) (see also Section 9.4.6).

As measures for the general social capital of individuals, network composition indicators have their limitations. First of all, only some of these measures specifically refer to resources embedded in relationships, such as those considering education, income, and prestige of network members, which can indicate access to human, financial, and cultural capital collections (see also Chapter 6). Indices for the heterogeneity of more descriptive alter attributes (e.g. gender) or relationship characteristics (e.g. tie strength) refer only indirectly to social resources, via arguments about the association of resources with attributes. Furthermore, it has been suggested that diversity measures are only relative indicators, that are less informative when they are not linked to absolute levels of accessed characteristics (Campbell et al., 1986): some network diversity characteristic can have the same values for very different groups of alters. For example, two social networks, of which one contains alters between 10 and 50 years of age, and the other contains alters between 30 and 70 years of age, both retrieve an age range value of 40 – the same can be true for the standard deviation of age. Because it can be assumed that both networks will have different characteristics in terms of social capital (e.g. the assumption that older network members have more human or cultural capital), such range measures are more informative when then are accompanied by indicators of average or maximum age.
Practically, the value of network composition measures as social capital indicators is limited because of the number of possible measures, and the lack of clarity about their relative importance in relation to goal attainment with social capital. Since network composition measures can be constructed for so many different alter and relationship attributes, rigorous theoretical ideas about their relative importance in individual goal attainment would be needed for their use as general social capital measures. As yet, such overarching ideas have been underdeveloped, which has led to impractically large collections of incomparable indicators in the literature (see Campbell & Lee (1991) for relationships between many of these measures, and validations by Marsden (1990) and Broese van Groenou, Van Sonderen, and Ormel, 1990).

Nevertheless, the calculation of these diversity measures is still an improvement over simple estimations of network size (or indeed, no measure for social capital at all). Especially since the collection of data suitable to construct such measures is still included by default in network investigations, the use of some network composition measures is returned to in Chapter 5.

**Structural measures**

Another type of indicator for social capital diversity is offered by measures for the structure of network relationships. Networks with higher densities are associated with lower degrees of diversity (see Section 2.1.2); therefore, network density measures have been considered as inverse indicators of social capital diversity (Campbell et al, 1986), similar to ‘constraint’ measures, indicating the absence of structural holes (Burt, 1992; see 2.1.2) as positive indications of social capital diversity. Other notions about the influence of network structure on individual behaviour led to the development of many other structural network measures (see Borgatti, Jones, and Everett, 1998).

Social capital measures based on arguments of network structure should ideally be computed from data about complete networks, since ego-centered network data does not include information about relationships between alters. However, measures related in meaning have also been calculated as aggregations for ego-centered network contents. For example, Mitchell (1969) used a network density measure defined as the average strength of ties to alters, based on the assumption of higher transitivity between stronger ties: a higher average tie strength therefore implies more connections between alters. However, this type of operationalisation has the disadvantage that it is very similar to measures indicating the presence of strong ties. Separate effects on returns to social capital of either accessing strong ties or network closure then becomes indistinguishable.

In addition, indicators of network structure have the disadvantage that they only include measurements of relationships and their patterns, and do not directly refer to the availability of identifiable social resources – they therefore do not have the same meaning within every context of social capital. For example, Burt’s network-based measures are very useful in business environments with clear advantages as outcomes, but may not be suitable for investigating the social capital applicable in other environments (such as domestic life, leisure time) including both the accomplishment of instrumental and expressive actions as desirable outcomes. In general, research evidence of the relationship with beneficial social capital outcomes of measures of network structure is much less clear than either network resource and contact resource measures (Lin, 1999b).
3.2 Multiple measures

So far, considerations about a morphology of beneficial social capital only regarded single measures. In Chapter 1 however, several difficulties associated with the use of single social capital measures were already noted. First, the diversity of exchanges with social resources between individuals, and the diversity of individual goals, make it unlikely that social capital is a unidimensional concept. Furthermore, single social capital measures leave a lot of interesting information unused, since the same numerical values can represent very different collections of social capital (see e.g. the example for age diversity in Section 3.1.3). Therefore, positive associations between these measures and returns to social capital can only be interpreted as rather unspecific effects of social capital. Another problem with the use of single social capital measures is that an investigation of the goal specificity of social capital is not possible without multiple measures. The type of social capital that is productive in a specific context can only show in prospective research if multiple measures are included aimed to detect different types. For such an investigation a certain diversity of measures relating to relatively restricted kinds of social capital is needed, that each meaningfully differ in represented content.

Proceeding from the single, ‘total’ social capital measure in equation 3.1, a better representation of social capital will therefore be one as a collection of $m$ separate social capital measures:

$$SC = \{sc_1, sc_2, \ldots, sc_m\}$$

of which each portion $sc_j$ is then defined as

$$\sum_{i=1}^{n} r_{ij}p_{ij},$$

not being summed over $j$ (in contrast to 3.1). This collection of social capital measures incorporates the three dimensions alters, resources, and availabilities of resources, with a split distinction between various domains of resources. This definition has its drawbacks when it is literally followed. A large effort is required to collect the data needed to express social capital this way: the ego-centered network needs to be mapped before all these questions can be answered. Using various types of data collection, this kind of research has established some tradition, but the measurement of all elements that are needed to properly calculate available resources is very time consuming, and also not very satisfying as these can only be measured very approximately (see Chapter 5).

Another problem in the construction of such cumulative measures for social capital is that of a common metric. The various resources that together form ‘social capital’ cannot a priori be measured on a common scale, as there is no uniform ‘social currency unit’ for social transactions in the way Coleman (1990) described them as ‘outstanding credit slips’ (Section 1.1.3); in other words, the unit of measurement for $r_{ij}$ is problematic. Some authors have proposed that maybe time can serve as this social currency unit, because by engaging in activities for purposes of others, efforts are always made in the form of time spent (Weesie, Verbeek, and Flap, 1990). This idea would however need much more elaboration to make it viable. In addition, for one individual e.g. one minute of job advice may be much more valuable than one hour of babysitting, while the opposite may be true.
for another. Since the application of individual utility to the attainment of various goals and needed resources is also highly context specific, the development of a ‘social capital unit of measurement’ is highly impractical.

3.2.1 Additions over alters

In the above expressions it has been implicitly assumed that for each subdomain, access to social capital is proportional to the number of persons providing resources in the network, and also that the larger this number is, the better this goal can be achieved. This assumption of proportional returns to greater numbers of alters does not apply to many goals however: “the more, the merrier” only seems to be true to a certain extent. For example, the more (different) information about job opportunities one hears, the better it may help initially; however, after a while this information may start to repeat itself. For most goals the availability of additional alters does not have proportional but diminishing returns, whereas the costs of relationship maintenance are fixed (see Section 2.1.4).

Usually, having access to a limited number of alters suffices. First, the help from multiple alters can be unnecessary. For some goals access to resources of only one alter is sufficient, making any additional alter providing similar resources superfluous. For example, when feeling lonely, one right alter providing company may suffice; the same is true when someone is needed to help fill out forms for tax declarations (Snijders, 1999). Second, the help from multiple alters can be inconvenient: when moving to another house, only a certain number of helpers is needed, because in larger groups coordination problems can emerge (Borgatti et al, 1998). In other cases, such as borrowing money from several others, ego may want to avoid ending up with multiple outstanding debts, which can be administratively and emotionally unpleasant. Third, assistance in goal attainment from multiple alters can be normatively restricted. In the supply of love and sexual intimacy, also social resources, individuals are usually dependent on one alter only because romantic relationships tend to be monogamous, and sexuality is usually normatively restricted to interaction with one specific alter.\(^4\)

In the effect of social capital a very important difference will therefore be between having one alter giving access to a certain resource, and no alter at all; much less between one or more alters providing the same resources (Snijders, 1999). This implies that the measurement of social capital does not have to start with making complete social resource inventories of social networks, but could be limited to checking the existence of at least one tie to alters giving access to a collection of important social resources is concentrated on. Because indications of resources then do not have to be added over all alters, this approach also solves the problem of common denomination. Rather than making a full inventory of all alters and their respective resources, this approach resembles a checklist,

\(^4\)In many cases, extra alters providing similar resources could be seen as ‘insurance’ for a certain kind of help, because across relationships the opportunities for various alters to actually exchange help with ego will vary over time. Because a possible lack of an opportunity to exchange help will only play a role in some specific social capital transactions (see Section 2.2.3), this will not be explicitly taken into further consideration. A second argument to disregard most ‘extra’ alters is the order among network members who has to help first (see Section 7.1.2). This also suggests that the added value of extra help ‘insurance’ is relative, because it is less easily mobilised than from the usual alters, and therefore also shows diminishing returns.
counting how many of the items are present in the network. A single checklist diversity measure can then be expressed as:

\[ SC = \sum_{j=1}^{m} p_j \]  

(3.4)

where

- \( SC \) = the quantification of an individual’s social capital diversity
- \( m \) = the number of distinguished items
- \( p_j \) = the probability that ego can get access to resource collection \( j \).

This approach simplifies the actual measurement procedure of social capital; measurement will just comprise checking a list of resources. A subsequent question is however what should be counted.

An older notion of social capital measurement based on this checklist-approach suggests counting organisational memberships over networks (Campbell et al, 1986; McPherson & Smith-Lovin, 1982). The idea behind such measures is that being a member of organisations introduces one to more diverse people, and therefore may lead to access to more diversified social resources. One’s social world may even be further enlarged by becoming a member of organisations whose members are also members of various other organisations of which ego is not (yet) a member (Flap, 1991:6182, footnote 2).\(^5\) A problem with the validity of such measures is the decision which types of organisations should be counted as potential sources of social capital. Some organisations do not involve active participation and social encounters, but only exist on paper, and are referred to as “cheque-writing associations”. People who report large networks also tend to report joining more new groups (McPherson, Popielarz, and Drobnic, 1992), but there are not many studies about the relationship between social network composition and association membership, and most of these have been confined to North America (Bekkers, Völker, Van der Gaag, and Flap, 2004). Membership of voluntary associations is related to having more frequent, personal contacts with others (Fischer, 1982a; Heran, 1988; Wilson & Musick, 1998), but such positive associations can also be explained in the reverse causal order: large networks may also lead to membership of more different associations. More importantly for social capital measurement, it is not directly clear to which resources these members may give access. Counting memberships of organisations introduces a whole new set of assumptions and problems, and is therefore not considered here as a separate method for the quantification of social capital.

The checklist-approach has been used with the Position Generator instrument (Lin & Dumin, 1986; Lin, Fu, and Hsung, 2001), in which the representation of network members’ social resources is derived from a general social theory (Lin, 1982, 2001a). The instrument includes a set of items that each refer to an occupation with a specific job prestige. Respondents can indicate in which of these occupations they know alters, and measures tapping the diversity of social capital are subsequently made by calculating the

\(^5\)Membership of voluntary organisations has more often been discussed as an indicator for collective level social capital, see e.g. Morales Diez de Ulzurrun (2002).
number of different positions that is accessed, and the range of accessed occupational prestige. However, because of its concentration on occupational prestige, the construction of multiple, domain-specific social capital measures from the Position Generator is only possible to a limited extent, although one might vary the kind of positions one asks about (the Position Generator instrument is further elaborated in Chapter 6).

Therefore, a checklist type social capital measurement instrument with questionnaire items representing more concrete examples of social resources, not restricted to questions of prestige, has been proposed as an improvement. Analogous to the Position Generator, this instrument is called the Resource Generator (Snijders, 1999; Van der Gaag & Snijders, 2004, 2005; see also Chapter 7).

### 3.2.2 Counting within domains

Combining equations 3.2 and 3.4, a multiple version of social capital checklist measures may be expressed as a collection of measures for each domain $j$:

$$SC = \{p_1, p_2, \ldots, p_m\}.$$  \hspace{1cm} (3.5)

In this expression, it is assumed that each $p_j$ is a single response. In order to make each measure $sc_j$ from equation 3.5 validly represent a domain of social capital, and to measure this more reliably, a multiple number of items is preferred. This number does not have to be the same for each domain, and can be expressed as $k_j$:

$$sc_j = \sum_{h=1}^{k_j} p_{hj},$$  \hspace{1cm} (3.6)

where $p_{hj}$ is a binary indicator of access to resource item $h$ in domain $j$. Equation 3.6 raises two issues. First, the question how important it is to measure additional help from multiple alters. Second, that $p_{hj}$ should indicate the availability of resources. The expression could be rewritten as

$$sc_j = \sum_{h=1}^{k_j} n_{hj} t_{hj},$$  \hspace{1cm} (3.7)

where

- $k_j =$ the number of resources that is measured within domain $j$
- $n_{hj} =$ a measure (relatively) indicating how many alters who can make resource item $h$ in domain $j$ available to ego
- $t_{hj} =$ a measure indicating the availability of resource item $h$ in domain $j$.

As discussed earlier, the most important difference regarding the number of available alters that give access to specific resources will be between one alter or no alter at all (section 3.2.1). Snijders (1999) suggested that $n_{hj}$ is a domain-specific function, that has a limited number of values between 0 and 1: it has value 0 when help $hj$ cannot be obtained from any alter, and 1 if it can be obtained from two or more alters; whereas the presence of only
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one alter may result in an intermediate value. When it is certain that one alter suffices, $n_{hj}$ may be set to 1 when one or more alters are available.

Availability measure $t_{hj}$ is a function expressing how to extract information from potentially multiple alters giving access to resource $j$. An often followed choice here is to code only the strongest relationship through which resource type $j$ is available. For instance, within the approach of the Position Generator (Lin & Dumin, 1986), answer categories are usually ‘family member’, ‘friend’, and ‘acquaintance’ in diminishing order of tie strength. These can be represented by numbers indicating the expected availability of resources from each of these classes of relationships, for instance by 3, 2, and 1, respectively. However, the assumption that the order of diminishing availability of resources is always family member, friend, and acquaintance has not been tested, and may not be true for all types of resources; for example, advice on important matters is often harder to obtain from family members than from friends (e.g. Lee, 1969). Furthermore, the normative embedding of relationships, and their influence on resource availability also varies across populations.

It can be questioned whether $t_{hj}$ should emphasise the most available resources, instead of the potentially most useful. Given the ‘strength of weak ties’-argument, within specific domains, incrementing values for $t_{hj}$ could also be selected on the basis of selecting the weakest tie through which a resource could be accessed. As was discussed in Section 3.1.1, such arguments are as yet too context-specific. In this study, the problem is avoided by only coding whether any relationship is present in the network through which a certain resource could be accessed, following equation 3.6. This renders only binary values: (0) no resource from type $j$ available, or (1) resource type $j$ available from at least one alter, through any relationship.\(^6\)

The assumption that the terms $n_{hj}t_{hj}$ can be added is based on the idea that each of the $k_j$ resources adds in usefulness to the attainment of individual goals within domain $j$, and that the presence of each of these resources is not dependent on the presence of another. In order words, the sum of all $k_j$ resources is assumed to be a good indicator of useful, domain-specific help. Essentially, this assumption is also a basis for the construction of single social capital diversity measures with the Position Generator (Lin & Dumin, 1986; Erickson, 1996). Within the domain ‘getting a job’, resource items that could be included are the presence of network members who might read different newspapers, network members who have good contacts with various businesses, network members who have good ideas about how to successfully apply for jobs, etc (it is also possible to weight the resources in (3.6) with a measure for their importance). However, it is not easy to deduce the composition of the $k_j$ resource items from general theory on goal attainment.

3.3 Distinction of resource domains

In the history of social capital measurement, most emphasis has been put on the measurement of personal networks (Marsden, 1990; Flap, 1999). Since social capital consists of both relationships and resources, especially the development of better measures of ac-

\(^6\)Practically, when parsimonious versions of checklists are desired, assumptions about $n_{hj}$ and $t_{hj}$ could be incorporated into the questionnaire wording, and $s_{cj}$ can subsequently be retrieved as a single response from an informant. The resulting data will then be less flexible in their application, however.
cessible social resources should be one of the main issues. In this section, the selection of useful resource measurement items is discussed.

In Section 1.2.3 it was argued that the investigation of a general collection of resources of individuals in a general population will contribute most to the development of social capital theory. What comprises a ‘general’ resource collection useful in goal attainment for the general individual is however a very broad, and therefore very difficult question. It is not possible to measure every possible resource that could become social capital, so a restricted collection is needed, which should be translatable into diversity measures (section 3.1.3), but which should range from the material and instrumental to the immaterial and expressive (see Section 1.3.4). Methodologically, the omission of potentially important resource items should be avoided; practically, the over-inclusion of items should be avoided, as the researcher is restricted by questionnaire length and available interview time.

To approach such general and varied social capital, and operationalise it with suitable measurement items, some organising principle is needed to circumscribe possible social resources, and transform them into convenient, meaningful categories. To do so, it would be helpful to have a more or less complete catalogue of meaningful subcollections of resources. Such a catalogue does not exist however, but several theoretical categorisations can be used to produce meaningful sets of items.

For social capital, there is as yet no empirical support available as to how social resources in general can be divided into separate collections or resources, that are meaningful in the investigation of e.g. goal specificity. By focusing on the ‘general’ social capital of the population, social resources need to be identified that are useful for most individuals. To do this, general theories are needed that consider which resources are useful for individuals, and how they can be divided into meaningful subdomains. For this purpose the distinction of individual goals, the distinction of capital forms, and the predicted effects of social capital can be considered.

### 3.3.1 Distinction by individual goals

The basis of the social capital research programme itself is goal attainment of individuals. The desire to know how individuals could benefit in attaining their goals by accessing social capital almost automatically leads to the question which goals individuals have in general. In Section 2.3.1, Social Production Function theory (SPF) was introduced as a rational choice-based theory offering a frame of reference to study and structure individual goals. If general social capital should be measured, it can be argued that measurements should cover most intermediate individual goals from SPF theory, because this is the level where goals are connected to resource collections: stimulation, external comfort, internal comfort, attainment of status, behavioral confirmation, and affection. Although SPF theory explicitly structures general goals for individuals, and specifies the possible relationships with lower-order goals, it is silent about which ‘production factors’ – among which personal and social resources – connect to which life domains and goals. There is no one-to-one correspondence between categories of goals and categories of resources: the same resources can be applied for multiple goals (multifunctionality), and to attain

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7 Effectively, this question is an advanced version of the ‘network boundary or delineation problem’ (see Section 3.1.2).
one single goal, multiple resources can be applied. Strictly spoken, a thorough theoretical selection of social resource items in questionnaires could only take place if enough knowledge would be available about social production functions.

Categorically studying individual goal attainment, and structuring the respective meanings of different resources, is a study in itself. In an exploratory study refining SPF theory, Van Bruggen (2001) empirically investigated what individuals see as essentially different domains of goal attainment, and specified many production factors and second-order goals for the social well-being part of SPF theory in particular. On the basis of extensive qualitative interviews with Dutch adults, Van Bruggen identified six categories of contexts in which people produce their (social) well-being. Together, they provide a general ‘overview of life’: 1) private productive activities: housekeeping, odd jobs and maintenance, child raising, self care, and informal care given to others. 2) personal relationships: production, maintenance, and consumption of personal relationships as the prime objective. 3) private discretionary or recreational activities: everything that is private, but does not concern a productive activity or personal relationship in the private domain. Examples are hobbies, recreational sports, watching TV, doing nothing, etc. 4) public productive activities: paid work, voluntary work, and schooling. 5) public relationships: contexts in which people primarily deal with the outside world, and the general rights and obligations connected with citizenship. Examples are paying taxes, fulfilling requirements for obtaining the Dutch nationality, obeying traffic rules when driving on public roads, etc. 6) public non-institutionalised interactions: interaction with strangers on the street, in shops, or in public transport. Also, indirect contact and communications with others and with society at large such as through public media: watching soap-series on TV, reading readers’ columns etc.

Each of these categories represents clear domains within which social resources can be imagined that are translatable into social capital measurement items. Resources that are applicable in field 2 are almost automatically accounted for by having any friendly relationship, because they concern the relationship as a goal in itself. Studying the number of intimate, rewarding relationships – a research field that has received considerable attention within the field of friendship research and social network analysis – can therefore be seen as an indication of the resources that apply to this domain. Field 6 has little to do with social capital: encounters with people with whom no common past is shared are not social capital contexts following the definition from Section 1.3.5.

3.3.2 Distinction by forms of capital

Considering theoretical classifications of resource collections, or forms of capital, can also help to inspire the distinction of social capital measurement domains. This study began with the assessment that over the years, social theorists have distinguished several different forms of capital, referring to different kinds of resources: financial capital (money), human capital (personal skills and knowledge), political capital (power), and cultural capital (knowledge and skills regarding one’s own culture) (see Section 1.1.1). Based on Weber’s ideas about economical, political, and symbolic resources, Lin (1982, 1999b, 2001b) argued that wealth, power, and status can be distinguished as universally valued resources. Because social resources comprise all the above kinds of resources within the personal network, these distinctions can easily be transferred to social resources, and social networks,
and conclude that ‘general’ social capital at least comprises resources from each of these
categories.

On the more practical level, social support research offers inspiration for the con-
struction of ‘general’ social capital. Although for a long time there was no clear consensus
on which forms of social support should be distinguished (Schrameijer, 1990), one typology
that has gained some tradition over the years comprises a categorisation into four types
of resources (Van Busschbach, 1996:26-28): Information comprises both the knowledge
of network members, and their ability to obtain information from their own networks. Emo-
tional support and companionship are the resources for which social capital more or
less has a monopoly in supplying them to the individual. Whereas companionship can
indicate anything social beyond a mere physical presence of another person, emotional
support usually refers to interactions that are more involving (such as e.g. the well-known
US General Social Survey-item ‘discussing important matters’ (see Burt, 1984)), but also
help in times of problems. Practical and instrumental support comprise practical services,
help in moving house, borrowing material goods as money, tools, etc.

3.3.3 Distinction by effects of social capital

Categories of social capital can also be defined based on categorisations of mobilisation
and potential returns to social capital. Lin (2001a:45-46) argued that mobilisation in-
volves either instrumental actions, taken to obtain resources that are not owned by ego,
or expressive actions, that are taken to maintain resources already owned by ego (see also
Section 1.3.3). Lin (2001a:244) also distinguishes three types of returns to each of these
transactions which can be a basis for social capital item selection: instrumental actions
have wealth, power, and reputation as returns; expressive actions have physical health,
mental health, and life satisfaction as returns. The returns to instrumental actions can be
recognised as the production factors from SPF theory, and coincide with the universally
valued resources. The returns to expressive actions largely resemble intermediate or ulti-
mate goals from SPF theory, the production factors for which can be identified with the

Finally, the mechanisms returns to social capital can be considered to inspire social
capital measures. In Section 2.3.2, four mechanisms were specified through which social
capital can be a useful addition to other resources: facilitation, reference to external
parties, social credentials, and unique provision of resources.

Steps in constructing sets of social capital items

Not all classifications of goals, forms of capital, effects, and mechanisms directly lead to the
distinction of clear domains, but they can all be used to provide useful ideas to guide the
researcher in the construction of sets of measurement items. For example, the classification
by Van Bruggen (2001) can be used for a start, because it has the most empirical basis.
Moreover, it refers to readily imaginable situations, and sets of items within each of
the six distinguished domains can be constructed. After this first step, the theoretical
resource classification by Lin (1999b, 2001b) can be used to check whether wealth, power,
and resources are equally represented in these domains (if applicable), whether the items
represent both expressive and instrumental actions, etc. until a collection of items has
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emerged that seems to cover most of the above.

In the translation of theoretical classifications into actual questionnaire items, many researchers will encounter the incongruency between individual goals and resources in practice – and also between sociology and everyday life. Many everyday situations in which help from others may be helpful refer to more than one theoretical category of resources. This makes a difficult situation for the construction of social capital questionnaire items, that should refer to realistic situations and to single resource collections only. Moreover, in transactions with social capital, usually more than one type of resource is exchanged, if only because the pleasure of the interaction in itself can always be seen as an additional resource.

Whereas so far the assumption has been that the construction of a ‘general’ social capital measurement instrument is started without prior knowledge, in reality there are more or less clear assumptions made on the importance of the inclusion of certain resource measures, that may have proven to be important variables in earlier empirical research. Therefore the selection of resource measures for a social capital measurement instrument will preferably be a combination of empirical and theoretical clues. Such a combination has also been the basis for the composition of the Resource Generator used in this study (see Section 7.1.1).

3.3.4 Statistical distinction

In previous sections, the distinction of separate social capital domains was considered from a theoretical point of view, grouping items by the expected effects they may have within a certain life domain: social resources that are additive in helping to attain the same goal (Snijders, 1999). In this way, a measure may be constructed for each of the domains distinguished by Van Bruggen (2001). However, the current knowledge on the productivity and goal specificity of social capital is too fragmented and incomplete for this purpose. Therefore, instead of grouping items based on their effects, in this study their correlational structure on a population level is used (cf. Snijders, 1999). To explain how such empirically independent social capital domains can be distinguished, the basis of social capital creation must be reconsidered: the social relationship.

In explaining relationship formation and maintenance, three determinants were discussed in Section 2.1.4. First, an ‘opportunity structure’, needed to get into contact with persons and keep the contacts going. Second, the choice of others within this opportunity structure, e.g. by homophily or purposeful investments. Third, personality characteristics, and in addition relationship constraints formed by time and resource budgets. Social capital is created and maintained given these constraints, and may result from deliberate, goal-oriented investments in relationships, as a by-product from on-going activities and relationships, and in addition be present in the form of endowments or inheritances.

For each individual this selection and investment process results in access to a more or less unique, personal collection of social capital. Furthermore, because not all individuals will access the same subcollections of social capital, an observation of access patterns on the population level may lead to the distinction of meaningful social capital domains. Positive correlations between groups of resource items indicate that individuals who access one of these items also have a high probability of accessing other items from that group. Such a group of items can thus be considered to represent a social capital do-
main, in which no specialisation takes place in terms of concentrating on some of the resources at the expense of others. Items from each group can therefore be aggregated into a domain-specific social capital measure. Thus identified domains for social capital are population-specific, and it can be expected that for most populations there are several of these roughly independent, empirically distinct domains of social capital.

To investigate the correlational structure of social capital items, we propose to model social capital as a collection of latent traits: variables in a population that describe individual attributes with values that may change over time, but can be measured only indirectly, and therefore with error (earlier applications of the concept of latent traits within sociology go back to Lazarsfeld and Henry’s work on latent structure analysis (1968)). Although in the strict sense social capital is owned by ego’s network members, when its effect on individual goal attainment is considered it becomes an individual quality, and is also conceptualised as such: individuals have ‘more’ or ‘less’ access to social resources, which possibly enables them to attain certain goals in life. This is the basis to introduce latent trait methods to investigate sets of social capital items in Section 4.2.2.

Besides the construction of measures for future use, the assessment of correlation patterns within social capital items could also serve a more macro-sociological interpretation. The degree to which separation is present between clusters of accessed social resources tell us something about inequality in that population. In a population where many social capital items show positive mutual correlations, the availability of one social resource is associated with many other kinds of social resources. In empirical data this pattern will show up as one large, general measurement scale or dimension that is present in the sets of items. Social capital will then generally be accessible across many subdomains, provided one has access to at least one of these items. Overall, social capital can then be considered a very common basis for inequality in that society, provided it is productive: some groups will have access to social capital in many domains; others will access next to nothing.

In another situation, where social capital items can be distinguished in several subsets, internally strongly correlated but with weak correlations between items in different subsets, access to social resources does not reflect a single polarisation in society between the ‘haves’ and the ‘have nots’ of social capital. In empirical data investigated with advanced methodology (such as factor analysis or IRT techniques, see Chapter 4), these clusters will show up as multiple measurement scales, or dimensions in sets of items. The sets of positively correlated items then identify certain domains within which certain kinds of resources are generally accessed. Social capital can then be seen as a more differentiated basis for inequality, where e.g. one subgroup may have better access to resource type A, while another group has better access to resource type B. A subsequent question is then whether access to resource types A and B leads to specific advantages and returns to social capital.

3.4 Outline of the empirical part of the study

In the remainder of this study, the aim is to identify subdomains in social capital distinguished on the basis of the patterns of statistical associations between items, and compare resulting domain-specific measures with more traditional social capital measures.
In Chapter 4, the data and methodology are presented with which the structure of social capital of the Dutch population is explored in subsequent chapters. In Chapter 5, the compositions of the networks of the Dutch will be considered, and used as a basis for the construction of some older network size, structure, and composition measures mainly as background material for the following chapters.

In Chapters 6–8, multiple measurement scales for social capital are developed using the ideas presented in this chapter, for each of three different data types: the Position Generator in Chapter 6, the Resource Generator in Chapter 7, and the Name Generator in Chapter 8. In Chapter 9, the measurement results from Chapters 5–8 will be compared with one another, and lead to an overarching discussion of what has shown to be a useful and fruitful approach in measuring social capital.