Social Capital in Education

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Functional communities around high schools in the Netherlands

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Many studies have been devoted to the explanation of educational achievement; more specifically, to its distribution among students originating from various social groups. With regard to the distribution of educational opportunities, the focus over the past decades has been on the search for explanations based on the social background of students. The importance of the family for a successful educational career has been substantiated by much research. Central to this line of research is the insight that the extent to which school careers are successful depends not only on the individual characteristics of students (e.g. cognitive ability) but is also connected with the position of the family of origin within the social structure. A substantial part of this family socialization research concentrates on factors benefiting a student's educational career that can be linked to the position of the family in the status hierarchy.

Families differ in the facilities available to them that provide their children with qualifications that – in turn – will enable them to successfully participate in education. In this approach, the resources available through the family of origin are considered to be the intermediate factors between family background and the student's educational career. These mediating characteristics, resources or 'capital' available within the family, refer to different mechanisms that may affect educational achievement and its distribution across social strata. This contribution discusses and explores the empirical basis of one of the most prominent ideas about family resources and capital in education as proposed by James Coleman and Thomas Hoffer in the late 1980s: the idea of functional communities.

Theory

Resources and educational outcomes

Families can support their children through different resources and in various ways. Early on financial resources – capital in the strict sense – have been suggested as one of the explanations for socially different patterns of educational participation and achievement. *Financial capital*

consists of the financial and other material means that a family has available for education. These can be easily understood as mediating characteristics. The higher the educational and occupational level of the family, the higher the budget available for educational expenditures. *Human capital* refers to the knowledge, skills, and capabilities that facilitate a person to act more effectively. Human capital is usually measured in terms of the parents' education, which can contribute substantially to a favorable starting point for successful educational participation. Another source of parental attributes related to scholastic capital that may be of help to their children has been named 'cultural' capital (Bourdieu and Passeron 1977). *Cultural capital* approaches seek the explanation for the relationship between school success and family background in the cultural knowledge and attitudes of families that benefit a successful educational career.

Although a more or less natural extension of human, financial, and cultural capital, a fourth type of resource has only recently received attention. Known as 'social capital', this kind of resource refers to means available to families that reside in relationships between people. The work done by Coleman and Hoffer (1987) concerning the effects of social resources on the distribution of educational opportunities has especially drawn attention to social capital in the field of education. They proposed that an explanation for the favorable educational performance reported for Catholic schools may be found in the social capital available in the networks around these schools. Coleman and Hoffer explain the relatively high achievement of students in Catholic schools, and particularly the favorable results of students from deprived backgrounds, from what they call the 'functional communities' that surround American Catholic schools. Catholic schools were said to be part of a tight-knit community, where the parents of students often know each other. For this reason, it is easy for them to exchange information about their children and the school and to monitor both their own children and those of other parents. Thus, social capital is deemed to be available in such communities, in the form of a close network of social relations, information, norms, and monitoring that promotes the students' scholastic achievements.

Social capital in education

Second-order and public social capital

Broadly speaking, research into social capital is undertaken from two perspectives. On the one hand, the concept of social capital refers to resources that become accessible through the relationships that individuals maintain with each other (e.g. Lin 1982). In many cases, social capital is understood as consisting of networks of social relations that may

be effective in allocating resources. In such a network approach, social capital consists of second-order resources: resources of an individual with whom you have a relationship and who makes these resources available to you. The production of social capital then depends on three factors: the number of individuals in the network willing (or obliged) to help you, the strength of the relationship, and the nature of the resources these individuals may provide access to (Flap 2002).

On the other hand, there is the approach that regards social capital as a public good. This public good aspect of social capital resides in the external effects that relationships between two individuals may have on other individuals in a common network. If such effects are beneficial to these others, no matter how much they themselves have invested in relationships with other network members, then social capital can be regarded as a collective good. Such a collective social capital is thus not based on individual property rights, as is the case with obligations between one individual and another. Instead, it resides in the community and benefits anyone who belongs to that network. Coleman's work on functional communities is central to this approach (Coleman and Hoffer 1987).

It is remarkable that few links have been established between the two approaches and that most of the work in these traditions is still done separately. Moreover, within the domain of education the 'collective good' concept of social capital has dominated the research and theoretical work into the role of social resources in the explanation of educational achievement and inequality of educational opportunities. Here, too, the Coleman and Hoffer study played an important role; their ideas inspired much of the research into social resources in education, so that research into social capital in educational contexts developed strongly from the tradition of social capital as a collective resource.

An overview of the results of fifteen years of research into the role of social capital in education (Dijkstra and Peschar 2003) reveals two other remarkable issues. The first issue is that social capital seems, as yet, a diffuse concept, among other things because of the general and divergent conceptualizations (cf. Portes 1998, Morrow 1999). This is partly a consequence of the open definitions of social capital often adopted by researchers, which take the function it fulfils as the starting point. Coleman's influential, yet open, definition of social capital provides an example: 'different entities [which] all consist of some aspect of social structures, and facilitate certain actions of actors'. These then also determine its value: 'those aspects of social structure to actors, as resources that can be used by actors to realize their interests' (Coleman 1990: 305). The second issue, which will not be elaborated here, is that there is little empirical knowledge about the effects of social capital in educational settings. So far, the results of empirical research have been fragmentary, and they provide an inconsistent picture.

Research questions

This present chapter, which is part of a larger project in the SCALE program aiming at the theoretical and empirical integration of the two traditions with the help of data about student achievement in Dutch secondary education, focuses on an exploration of the explanatory power of Coleman's functional community hypothesis. Against the background of the comments made above, we will concentrate on two issues. Because there is a need for further research into the conceptualization of social capital, our first aim is to test various such conceptualizations in the functional community tradition and examine how the various possible conceptualizations relate to differences in the achievements of schools. Secondly, for those forms of social capital that appear to correlate with educational output as revealed by our initial exploration, we will test in more detail if there is indeed empirical evidence to support a relationship with educational achievement.

Social capital in functional communities

From the perspective of the theory of functional communities, therefore, social capital resides in the social network around the school. At the conceptual level, Coleman (1990) distinguishes three forms of the social structure that generate social capital for child rearing: adult–child relationships, adult–adult–child relationships, and time-closure relationships. Coleman refers to a situation where there is a close-knit network of relationships between parents and children (and also of other parents) around the school as social-structural closure. The central notion of the functional community theory is that a higher degree of *social closure* contributes to a more consistent social setting for child rearing and education. Social structural closure is classified in the form of continuity over time – which is implicitly assumed in the other two forms – as a separate category because of the importance of time closure for the creation of forms of social capital such as investments and trust. Other forms of social capital are obligations and expectations, the extent to which the social structure facilitates the flow of information, and norms upheld by sanctions (Coleman 1988).

Before describing the various forms of social capital available in functional communities in more detail in the next section, we need to conclude this section with a brief description of the concept of a functional community.

The explanation given by Coleman and Hoffer (1987) for the higher achievement of students of Catholic schools centers on social resources supposedly available in the community around the school. Central to this approach is the notion that families differ not only in the extent to which they possess human and cultural capital but also in their access to

resources that reside in human relations (Coleman 1988). According to the functional community theory, these resources benefit all students that are part of such a community. Moreover, schools embedded in a functional community offer better educational opportunities to their students than schools for which this is not the case. As we will elaborate in more detail in the next section, a functional community is characterized by a relatively closed network of mutual social relations between generations and a dominant system of norms reinforced by the network. Such a closed network consists of relationships between parents who know each other, each other's children, and the other individuals in the social environment of their children (for example, teachers, youth workers, and youth volunteers). As far as the system of norms is concerned, what is important is not so much that the norms of the community are shared by everyone to the same extent, but that there is a clear, dominant set of social norms backed up by the community. According to the authors, such social capital available in the community provides parents with a grip on the social environment of their children, with respect to their contacts with friends, other social activities, and their lives at school. The homogeneous system of norms and the closed network create a uniform and effective pedagogical environment both through reinforcement beyond the direct control of parents (parents of friends and other adults around the child) and through the school (norms supported by the community). The social relationships within the parental community reinforce the parents' ability to monitor their children outside the family sphere too and increase their opportunities for adequate supportive and corrective action. The social resources thus accrued in functional communities increase the chance of a successful school career. They compensate for the inadequate resources of students from deprived backgrounds and thus mainly improve the educational opportunities of students from the lower social classes.

Measuring social capital

Data set and dependent variables

The data used in this contribution were collected from more than 1,400 students in 25 schools of secondary education in the Netherlands as part of the research program SCALE which forms the basis for this volume. The schools were taken from a stratified sample composed to represent the main sources of diversity among schools for all forms of secondary education. The sample was composed in such a way that important educational context characteristics were sufficiently represented in the data. Therefore most relevant variables such as level of urbanization, public or private school, the religious denomination of the school and the proportion of ethnic-minority students were taken as stratification criteria. In this way the data will be suited to present a picture of the relation between

educational output and social capital, especially when effects of social capital appear to be concentrated among specific groups or contexts.[1]

Data collection took place in 1999–2000, among students in the third year of secondary education who were around 15 years old at that time. Two nationally validated achievement tests were administered at school. Social capital was measured with written questionnaires for students, one of which was filled out at school, the other at home. In addition, the parents also filled out a questionnaire. For more details about the data set the reader is referred to Kassenberg (2002).

The four strands for the conceptualization of social capital suggested by the functional community theory concern the closure of the social network, and the extent to which the network provides information, monitoring, and social norms. For each of these strands, this section will discuss the measurements selected for the various forms of social capital. On the one hand, we will explain the background of the variables that we have used to measure social capital. On the other hand, we will give a provisional impression of the results achieved with these variables by means of bivariate correlations.[2]

Central to the idea of functional community is that it both is a public good and works in a goal-specific way. Therefore three dependent variables have been selected. Two dimensions of educational achievement were applied, namely the scores on language and mathematics tests administered in the third year of secondary education.[3]

Against the background of the forms of social capital discussed in this paper that concern mechanisms involving the monitoring of behavior and the presence of norms and sanctions, the extent to which socially undesirable behavior occurs seems also to be a characteristic on which social capital may have effects. One further indicator represents these wider social effects of education, namely a scale that measures the extent of deviant behavior of the students. The scale was developed by Baerveldt (1990) and applied to our data by Kassenberg (2002). It measures the frequency with which nine forms of petty crime are committed. These concern fare dodging, highway tax evasion, vandalism, theft in schools, writing graffiti, arson, assault, shoplifting and price tag switching, and handling stolen goods (for more information, see Kassenberg 2002).[4]

The choice of these three dependent variables is relevant since they enhance the idea that social capital can be regarded as a goal-specific resource: parents are able to monitor their children through the network. In the case of the achievement tests, the parents also get information on the functioning of the school.

Measurement of social capital

In our measurement of the various concepts of social capital, we have been guided by four principles. The first is the distinction between intra-

generational and intergenerational relationships. From the perspective of the student, this concerns child–child and child–adult relationships. This does not mean that adult–adult relationships will be omitted, but the forms of social capital that are relevant to educational output are dependent on the relationship that exists between (at least) one of the adults and the child. Whenever sensible, both intra-generational and intergenerational relationships have been included in the measurement. A second principle concerns the choice of the respondent. Social capital viewed as an intergenerational closed network implies that the estimation of the availability of social resources may be measured from the perspective of both students and adults. To evaluate the effect of the generational difference on the estimation of the role of social capital, variables for both generations have been included in the survey where this seemed useful. Besides trying to select characteristics that are appropriate to the behavior and social environment of the students and that are relevant to child rearing and schooling, we finally also considered the link with existing theories and research. The use of measurements employed in earlier research not only contributes to the corroboration of previous findings but will also provide an insight into the extent to which indicators of social capital are sensitive to differences between countries.

Social structure

An important distinction is the one between the existence of social relations as such and the resources that become available through these relations. The difference between these two concepts has been described in various ways. Smith, Beaulieu and Seraphine (1995), for example, distinguish structure and process as the components of social capital. Van Deth (2003) points to a comparable difference when he talks about structural and cultural aspects of social capital, the former of which he regards as connections or networks and the latter as elements such as the norms and manners in a network. Such a distinction illustrates that it is important to distinguish between a social capital concept that is defined from the perspective of the (in such cases usually positive) effects, and a concept in which social capital is 'neutral' and regarded as the vehicle – the social relations – that enables the mechanisms promoting child-rearing and schooling. In the latter case, the social network is mainly conditional and separated from the results it facilitates, which may be positive or negative. We have previously labeled this as the difference between social capital as 'channel' and as 'content' (Dijkstra and Peschar 2003). This distinction is also useful for the functional community theory. The social closure concept relates to the channel and is the fundamental dimension. It focuses on suppositions about the nature of the relationships around a school that have a positive impact on educational output. The content may be created independent of the channel, in relation to the mechanisms that

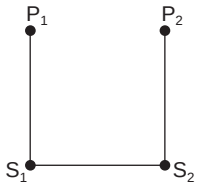
are supposed to create such a positive effect. In Coleman and Hoffer's (1987) functional community theory, the emphasis is on the access to information provided by such a network and the norms that strengthen it. We will begin by discussing the measurement of the concept of social closure, using Coleman's theory of closed intergenerational relationships as our starting point.

Intergenerational social closure

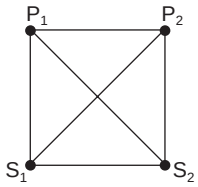
A closed network of mutual intergenerational social relations is a central feature of the functional community. Such a closed network embraces the whole spectrum of intergenerational relations that not only connect the child and the parent(s) but also, and especially, all the adults around the child. This includes, for example, relationships of parents with the parents of classmates or relationships between the parents and other adults in the social environment of the child. Social-structural consistency is deemed to exist in such a situation: 'The adults whom children see and know outside the home – both in and out of school – are adults closely linked to the family. The other young people whom children see and know are children of these same adults.'

The diagrams in Figure 6.1 represent such networks characterized by different degrees of social closure. Diagram A contains relationships between the parents (P_1 and P_2) with their children who are classmates (S_1 and S_2). Coleman (1990) characterizes this situation as a network in which intergenerational social closure does not exist. There are 'student–parent' relationships but no 'student–parent–parent' or 'student–student–parent' relationships, unlike the situation in diagram B, where the adults (P_1 and P_2) not only have relationships with each other, but also with each other's children (S_1 and S_2) (Coleman and Hoffer 1987: 222, 226).[5]

The degree of intergenerational social closure has been measured with variables measuring the contacts between students, parents, and teachers. A factor analysis resulted in the distinction of three dimensions: school-related intergenerational relationships, intergenerational relationships



A. Network without intergenerational closure



B. Network with intergenerational closure

Figure 6.1 Social closure around schools.

Table 6.1 Correlation between various measures of intergenerational social closure and output measures

	Language	*Mathematics*	*Deviant behavior*
Panel A: Social closure (according to student)			
Student–parent–parent relationships: school-related	0.09*	0.02	−0.02
Student–parent–parent relationships: not school-related	0.01	0.04	0.03
Teacher–parent relationships	0.06*	0.02	−0.02
Panel B: Social closure (according to parents)			
Student–parent–parent relationships: school-related	0.01	−0.06	−0.06
Student–parent–parent relationships: not school-related	0.02	0.01	−0.03
Teacher–parent relationships	−0.04	−0.12**	0.02

not necessarily linked to the school as context, and relationships between parents and teachers. Panel A in Table 6.1 shows that the average sum scores of these three intergenerational social closure measures do not or only very weakly correlate with the language and mathematics scores or the deviancy score. Various other measurements have also been tried, but these did not yield satisfactory results either.[6]

Besides variables relating to students, similar information was collected among the parents, for whom the degree of intergenerational closure was also measured on the basis of the contacts existing between students, parents, and teachers. As far as possible, the parent scales are identical to the student scales. Again, they concern school-related intergenerational relationships, intergenerational relationships not dependent on the school, and relationships between parents and teachers (see Appendices 1 and 2). These measures of social closure, too, hardly correlate with the language and math scores and the deviancy scale (panel B in Table 6.1). Only when parents state that they know the teachers of their children do we find a significant correlation with the math score. Incidentally, the negative relationship found here suggests a specific situation: presumably it is particularly the parents of students with math *problems* who know their children's teachers. Here, too, alternative measurements hardly led to meaningful results.[7]

It is remarkable, incidentally, that the social closure variables measured among students and parents correlate only slightly (Table 6.2). The way in which both parents and students view the relationship between parents and teachers in particular is correlated, as are students reporting parent–teacher relationships and parents stating they know other students and parents within the school.

Besides intergenerational contacts between parents and students or

Table 6.2 Correlation between intergenerational social closure according to different informants (students and parents)

Students		*Parents*		
		(a)	*(b)*	*(c)*
(a)	Student–parent–parent relationships: school-related	0.01	0.01	0.06
(b)	Student–parent–parent relationships: not school-related	−0.07*	0.02	0.01
(c)	Teacher–parent relationships	0.19**	0.09*	0.21**

parents and teachers, we have also measured the relationship between the students and teachers. Five items have been used for this purpose, which give an impression of the way in which students experience the relationship with their teachers. Compared to the other variables, the score on this scale is relatively strongly correlated with the dependent variables (panel A in Table 6.3). The relatively strong correlation with the deviant behavior score is particularly remarkable: students that report good relationships with their teachers are less involved in petty crime. Not only is a causal interpretation of this statistic problematic, but the question also arises whether this measure can be regarded as an unambiguous indicator of social closure. Although the items measure the extent to which there is a relationship between student and teacher, they could also simultaneously express (aspects of) the student's school experience (Appendix 3).

Intra-generational social closure

Although the theory predicts that intergenerational closure in particular will generate social capital, we are also interested in the question of whether the intensity of the contacts students have with each other may be regarded as a form of social capital. The underlying idea is similar to the reason behind the assumed relevance of intergenerational contacts. The

Table 6.3 Correlation between social capital and output measures (1)

	Language	*Mathematics*	*Deviant behavior*
Panel A: Student–teacher social closure (according to student)			
Student–teacher relationship	0.16**	0.09**	−0.38**
Panel B: Intragenerational social closure 'best friends – same school' (according to student)			
Best friends of student attend the same school	0.15**	0.10**	−0.19**
Panel C: Church attendance by student (according to student)			
Frequency of church attendance	0.23**	0.18**	−0.06

more students have relationships that tie them in with the network around the school and the more contacts they have with classmates and other students in their school, the greater the chance that there will also be intergenerational effects. In this sense, intra-generational student contacts may be seen as a condition for the existence of intergenerational closure.

The concept of intra-generational closure has been measured in various ways. First, by means of variables that give an impression of the duration and intensity of the relationships students maintain with their classmates and other students at the same school. These variables did not yield satisfactory results.[8] Secondly, variables have been developed to measure the relationships of students with peers outside the school context and the degree to which the peer relationships of students in non-school settings overlap their school-related relationships. This line of inquiry also did not yield noteworthy results.[9] For our analysis, we have selected the 'the best friends of the student attend the same school' variable. This variable, which has a slightly higher correlation with the dependent variables than most other measurements, expresses the degree to which the student's primary peer relationships coincide with his or her relationships in the school context. The variable shows that the more the network of friends coincides with the intra-generational network at school, the higher the language and math scores will be and the less the student's behavior will deviate from the norm (panel B in Table 6.3).

To supplement these more direct measurements that which an impression of the extent to which there is a functional community around the school, we have also measured the closure of the network in an indirect way.

Some of the variables used for this purpose measure if recent disruptions have occurred in the network, for example the family changing residence or the child moving out of the house. These variables did not have appreciable correlations with the dependent variables. Another indirect estimation of the closure of the network around the school concerns the church involvement variable selected on the basis of Coleman and Hoffer (1987). This variable, measured as the frequency of church attendance by the student, is relatively highly correlated with the output measures in comparison to the other variables (panel C in Table 6.3). However, as we have argued in more detail in Dijkstra and Veenstra (2000), church involvement lends itself to several interpretations and the overlap between the ideational dimension (religious beliefs) and the network aspect means that church involvement cannot be regarded as an unambiguous indicator of effects of social closure.

Resources

From the perspective of the distinction between social capital as 'channel' or 'content', a content approach offers a more immediate access to social

resources, since the social structure (the channel) mainly fulfils a conditional function, in the sense that the resources available to individuals through relations with others presuppose the existence of such relations. However, this does not tell us anything about the nature of the resources being made available in this way. For this reason, Dijkstra and Peschar (2003) refer to a measurement of social capital in terms of the social structure as 'neutral' because, in a goal-specific measurement of social capital, the structure of social relations as such does not provide an insight into the resources available within that network. Conceptualizations of social capital that do not take the social structure but the 'content', the resources themselves, as their starting point therefore provide a more direct outlook on the mechanisms referred to by the concept of social capital. Now that we have given an overview of the measurements of the social structure approach, we will devote the second part of this section to various measurements of the resources available in the network of human relations.

The description given by Coleman and Hoffer (1987) of a functional community focuses on information and social norms facilitated by a closed network of intergenerational relationships. The relations between parents and children and between the parents and other adults from the social settings in which the child participates give parents a grip on the environment in which child rearing and schooling take place. Such a network gives access to information that concerns both school affairs and other issues in the network in which the child finds itself. Information is not only important because it provides parents with the facts they need to make the best decisions and support their child adequately, but it also gives them the opportunity to monitor events outside direct family life, thus making it easier for them to undertake corrective interventions. The latter aspect means that monitoring of the behavior of the child or others may be distinguished as a separate category in addition to the information resource.

A closed network furthermore reinforces the opportunities offered by social norms underpinned with sanctions. A functional community heightens the visibility of behavior that deviates from the norm, thus making the imposition of sanctions easier. An example is the reinforcement of reputation effects in a closed network. Although we will not discuss the value communities also distinguished by Coleman and Hoffer (1987) here (for an assessment of the value community hypothesis tested against Dutch data, see Dijkstra and Veenstra 2000), we should mention the importance of value congruence, since norms supported by effective sanctions presuppose shared moral values expressed in social norms. The positive effects attributed to closed intergenerational relations are therefore based on the (often implicit) assumption that there exists a certain degree of value congruence and, moreover, that these values support schooling and child rearing.

To sum up, for the further conceptualization of types of social capital we have paid attention to resources in the form of monitoring, information, value congruence, and sanctions.

Monitoring

Social capital – regarded as the ability to monitor children outside direct family life – was measured with variables in which students were asked to indicate the chance that parents would still find out about their behavior even if they had not told them. However, this scale, which included events that could occur in or around the school (e.g. truancy), proved virtually uncorrelated with the dependent variables.[10] Parents were presented with similar variables. The scale based on these variables hardly appeared to correlate with educational achievement and deviant behavior either.

Information

The measurement of the extent to which students have access to information focused on being familiar with the background characteristics of families of classmates and the extent to which classmates know the family life of the student. In our data set these variables and scales do not correlate at all or only weakly with the dependent variables. Similar parent variables do not yield significant results either.[11]

Besides this measurement of information available to students and parents about background characteristics of classmates and schoolmates, we have also measured to what extent parents possess school-related information. We have used several variables for this purpose, which provide an insight into the number of times parents talk to parents of classmates of their child about subjects such as other classmates or their children's teachers (Appendix 4). Again, however, the scale based on these items does not correlate significantly with the language and math scores (panel A in Table 6.4), although there is a significant, albeit weak,

Table 6.4 Correlation between social capital and output measures (2)

	Language	*Mathematics*	*Deviant behavior*
Panel A: School-related information (according to parents)			
Parents talk about school-related subjects	0.01	−0.02	−0.10**
Panel B: Value congruence (according to parents)			
Presumed correspondence between opinions of parents	0.09**	0.04	−0.01
Panel C: Effective norms (according to student)			
Effective norms	0.11**	0.04	−0.09**

correlation with the deviancy variable. This correlation is negative: children of parents who indicate that they talk more often with other parents about subjects related to the school setting are less involved in petty crime. For both achievement measures, however, the findings deviate from what we would expect. A positive effect on educational achievement would have seemed likely, based on the assumption that a closed social network provides access to information that gives parents an adequate picture of the situation at school and of their child. Thus the chance of timely and effective interventions aimed at the child or the school would have increased, for example in case of learning difficulties or behavioral problems.

Value congruence and social norms

From the perspective of the functional community theory, social capital in the form of norms supported by sanctions is also one of the resources that lead to a context supportive of achievement. Norms that are beneficial to the school and to educational achievement and which are not limited to the family – or the school – but are reinforced within the social setting in which the school operates make it easier for the school to realize its goals. To achieve this, there should at least exist a situation in which the various roles in the school are not open to debate and in which the goals of the school are endorsed by the system of norms operating elsewhere in the social spheres in which students live. Schools operating in such a context are better off than schools that are standing alone when it comes to upholding the norms or are confronted with parents who thwart the school's system of norms. Against this background, we have included both the effectiveness of norms and their presumed congruence with underlying values in the conceptualization of social capital.

The 'value congruence' social resource has been measured in items that give an insight into the extent to which parents believe that they share more or less the same ideas about various ideational subjects with other parents. The scale based on these items does not or only weakly correlates with the dependent variables; only the correlation with the language score crosses the significance threshold (panel B in Table 6.4 and Appendix 5). A similar scale focusing on the extent to which parents believe that they and the teachers share more or less the same opinions was hardly informative either.[12]

The measurement of value congruence among students focuses on values concerning the relevance that students attribute to education and the school. This has been encapsulated in a student scale measuring the relevance attributed by friends of the student to their commitment to school and their school career in the longer term. With the exception of the petty crime measure, the scale congruent education-supportive norms does not yield significant correlations. Students who are more frequently

involved in petty crime state more often that they have friends who believe school and education are less important ($r = -0.14$**, see note 2). Here, the social resource of congruent norms seems to take on a negative guise, at least where deviant behavior is concerned.

We subsequently included norms in our exploration too. The parent items that give an impression of the extent to which they endorse the system of norms and the way it is upheld do not correlate with the dependent variables.[13] The norm congruence of the students was also measured. The variables developed for this purpose show varying results. In most cases, the correlations found here are also weak or lacking.[14] The relatively strongest effects have been found for the variable measuring if a student believes classmates will treat him or her differently if he or she breaks the rules in class. This form of social capital – the presence of effective norms – does correlate in the expected direction, although weakly, with the language achievement score (positive) and deviant behavior (negative) (panel C in Table 6.4).

Preliminary conclusions

Now that we have come to the end of this first, general, exploration of the empirical relationship between some outcome measures and diverse indicators of social capital, the preliminary picture is – at best – one of modest correlations. No significant correlations have been found for many variables and scales, and where effects do occur, they are almost always small. This conclusion applies to both the channel concepts of social capital (the characteristics of the social structure) and the content line (in which resources as such take up a central position). It must be pointed out, however, that if it is true that a functional community only exists to a limited extent, low scores are also to be expected on the social resource concept.

Before drawing any further conclusions from this picture, which has only been composed from bivariate relationships, we will continue our analysis and examine the effects after including other factors that influence educational output. We will do so for those concepts of social capital that exhibit some correlation with the output measures used in our preliminary exploration. This concerns ten variables. Six of these relate to social-structure measures: church-attendance frequency of students, best friends at the same school, intergenerational social closure according to students and according to parents, and student–teacher relationships. The three other variables concern social resources: information parents have about the school, value congruence among parents, and effective norms within classes.

The explanation of educational returns of social capital

Data were analyzed with a multilevel or hierarchical linear model. Multilevel analysis has various advantages over analyses at one level, such as a regression analysis with aggregated or disaggregated data (Bryk and Raudenbush 1992, Goldstein 1995, Snijders and Bosker 1999). By taking into account the hierarchy of data (students within classes within schools), the results are more accurate and may be interpreted easier than the results from an analysis at one level (e.g. only the lowest level).

Panel A in Table 6.5 shows the regression coefficients for the analyses on language achievement, panel B for mathematics achievement, and panel C for deviant behavior. Table 6.6 provides information about the variance components and the values of the deviance.[15]

First, we consider the effects of the structural characteristics on the language, mathematics, and deviant behavior. Gender has a significant ($p < 0.001$, one-sided) effect on all outcomes. Girls achieved better in language, whereas boys were better in mathematics. Boys also had a higher level (0.4 SD) of deviant behavior than girls. Taking the other structural characteristics into account, ethnic-minority students achieved one-fifth standard deviation below ethnic-majority students on mathematics. Their level of deviant behavior was one-fifth standard deviation above ethnic-majority students. There was no significant effect of ethnicity on language achievement. Finally, school 'track' has an effect on both language and mathematics achievement. The language and mathematics achievement is the lowest in the vocational track (VBO), and the highest in the pre-academic track (VWO). The simultaneous effect of the school track (see also Veenstra 1999), with six degrees of freedom, is significant for language (the decrease of deviance is 29.2) and mathematics (the decrease of deviance is 70.2) and not significant for deviant behavior (the decrease of deviance is 12.0).

The next column in all three panels A, B, and C shows the results after including the social capital characteristics. The simultaneous effect of the social capital characteristics on mathematics is not significant (the decrease in deviance is 11.0 with ten degrees of freedom, see Table 6.6). Five social capital characteristics have an effect on language achievement or deviant behavior. The student–teacher relationship even has an effect on both. Students who are positive about their relation with the teachers achieve better on language and their behavior is less deviant. The effect on deviant behavior is pretty strong ($\beta = -0.208$). Students whose friends attend their school also have less deviant behavior ($\beta = -0.051$). Church attendance (an indicator of intergenerational closure) and value congruence and effective class norms (both indicators of social resources) have positive effects on language achievement.

Table 6.5 Multilevel analyses of social capital and educational output (coefficient, s.e. in parentheses)

Panel A: Language achievement (N= 1,220)		
Structural characteristics		
Ethnicity (1 = ethnic minority)	−0.040 (0.071)	−0.064 (0.072)
Gender (1 = female)	0.161 (0.046)***	0.152 (0.046) ***
School track (reference: MAVO)		
VBO *(lowest track)*	−0.609 (0.236)	−0.611 (0.235)
VBO/MAVO	−0.178 (0.375)	−0.180 (0.373)
MAVO/HAVO	0.581 (0.312)***	0.628 (0.311)***
HAVO	0.432 (0.161)	0.410 (0.162)
HAVO/VWO	0.815 (0.261)	0.743 (0.261)
VWO *(highest track)*	0.952 (0.160)	0.885 (0.161)
Social capital		
Intragenerational closure:		0.025 (0.023)
Friends at same school (according to student)		
Intergenerational closure:		
Church attendance (student)		0.057 (0.029)*
Student–teacher relationships (student)		0.087 (0.023)***
Teacher–parent relationships (student)		0.020 (0.029)
Student–parent–parent relationships, school-related (student)		−0.042 (0.029)
Teacher–parent relationships (parent)		0.032 (0.026)
Student–parent–parent relationships, school-related (parent)		−0.027 (0.027)
Social resources:		
Access school-related information (parent)		−0.008 (0.024)
Value congruence (parent)		0.044 (0.024)*
Effective class norms (student)		0.067 (0.022)**
Constant	−0.451 (0.123)	−0.414 (0.124)
Explained variance		
– student level	24.5%	27.0%
– class level	54.6%	54.9%
– school level	53.8%	54.3%
Panel B Mathematics achievement (N= 1,217)		
Structural characteristics		
Ethnicity (1 = ethnic minority)	−0.181 (0.067)***	−0.182 (0.067)***
Gender (1 = female)	−0.222 (0.042)***	−0.225 (0.043)***
School track (reference: MAVO)		
VBO *(lowest track)*	−0.339 (0.186)	−0.348 (0.190)
VBO/MAVO	−0.168 (0.279)	−0.183 (0.285)
MAVO/HAVO	0.304 (0.280)***	0.321 (0.281) ***
HAVO	0.693 (0.138)	0.675 (0.141)
HAVO/VWO	0.497 (0.233)	0.453 (0.236)
VWO *(highest track)*	1.445 (0.134)	1.408 (0.138)
Social capital		
Intragenerational closure:		
Friends at same school (according to student)	−0.010 (0.022)	
Intergenerational closure:		
Church attendance (student)		0.043 (0.027)
Student–teacher relationship (student)		0.038 (0.021)*
Teacher–parent relationships (student)		−0.014 (0.027)

Table 6.5 Continued

Student–parent–parent relationships, school-related (student)		−0.009 (0.027)
Teacher–parent relationships (parent)		0.045 (0.024)*
Student–parent–parent relationships, school-related (parent)		−0.010 (0.025)
Social resources:		
Access school-related information (parent)		−0.009 (0.023)
Value congruence (parent)		0.014 (0.023)
Effective class norms (student)		−0.009 (0.021)
Constant	−0.459 (0.100)	−0.438 (0.103)
Explained variance		
student level	41.1%	41.4%
class level	74.6%	74.5%
school level	85.5%	84.4%
Panel C: Deviant behavior (petty crime) (N= 1,098)		
Structural characteristics		
Ethnicity (1 = ethnic minority)	0.196 (0.102)*	0.210 (0.100)*
Gender (1 = female)	−0.399 (0.059)***	−0.344 (0.059)***
School track (reference: MAVO)		
VBO *(lowest track)*	−0.124 (0.181)	−0.065 (0.168)
VBO/MAVO	0.017 (0.276)	−0.090 (0.253)
MAVO/HAVO	0.087 (0.195)	−0.018 (0.187)
HAVO	−0.023 (0.101)	−0.008 (0.097)
HAVO/VWO	−0.012 (0.159)	0.032 (0.153)
VWO *(highest track)*	−0.266 (0.102)	−0.199 (0.099)
Social capital		
Intragenerational closure:		
Friends at same school (according to student)		−0.051 (0.030)*
Intergenerational closure:		
Church attendance (student)		0.026 (0.034)
Student–teacher relationship (student)		−0.208 (0.028) ***
Teacher–parent relationships (student)		0.055 (0.037)
Student–parent–parent relationships, school-related (student)		−0.021 (0.037)
Teacher–parent relationships (parent)		0.005 (0.033)
Student–parent–parent relationships, school-related (parent)		0.035 (0.034)
Social resources:		
Access school-related information (parent)		0.030 (0.031)
Value congruence (parent)		0.024 (0.031)
Effective class norms (student)		−0.033 (0.028)
Constant	0.292 (0.086)	0.241 (0.083)
Explained variance		
student level	5.6%	11.4%
class level	14.7%	27.5%
school level	14.4%	32.6%

Notes
*: $p > 0.05$.
**: $p > 0.01$.
***: $p > 0.001$.

Table 6.6 Multilevel analysis: variance components and model fit

	Student	*Class*	*School*	*Deviance*	*Δ*
Empty model	Par. (S.E.)	Par. (S.E.)	Par. (S.E.)		
Dutch	0.582 (0.024)	0.256 (0.067)	0.137 (0.079)	2,951.9	
Mathematics	0.500 (0.021)	0.277 (0.072)	0.235 (0.110)	2,790.1	
Petty crime	0.957 (0.042)	0.006 (0.013)	0.036 (0.019)	3,095.8	
Structural characteristics (*df* = 8)					
Dutch	0.573 (0.024) $p < 0.001$	0.098 (0.030)	0.065 (0.036)	2,879.3	72.6
Mathematics	0.484 (0.020) $p < 0.001$	0.107 (0.031)	0.005 (0.020)	2,672.1	118.0
Petty crime	0.912 (0.039) $p < 0.001$	0.000 (0.000)	0.031 (0.015)	3,035.7	6.1
Social capital (*df* = 10)					
Dutch	0.549 (0.023) $p < 0.001$	0.099 (0.030)	0.064 (0.036)	2,827.1	52.1
Mathematics	0.480 (0.020) n.s.	0.103 (0.030)	0.010 (0.021)	2,661.1	11.0
Petty crime	0.863 (0.037) $p < 0.001$	0.000 (0.000)	0.022 (0.012)	2,969.1	66.6

Variance components and model fit

In Table 6.6 we compare the variance components and the model fit of the different models. First, we present the empty model. In this model the variance components are for language achievement 0.582, 0.256, and 0.137, at the individual, class and school level respectively. The intra-class correlation coefficient for differences between classes and schools is $(0.256 + 0.137) / (0.582 + 0.256 + 0.137) = 0.40$. For mathematics, the intra-class correlation coefficient is 0.51, and for deviant behavior it is 0.04.

In the next model we have added the structural characteristics. These characteristics explain variance at the individual, class, and school level: 25, 55, and 54 percent for language achievement; 41, 75, and 86 percent for mathematics; 6, 15, and 14 percent for deviant behavior. The calculation of the explained variance (Snijders and Bosker 1999, Veenstra 1999) for language achievement is at the *individual level*: $1 - (0.579 + 0.098 + 0.065) / (0.582 + 0.256 + 0.137) = 0.25$. At the *class level* the formula is (the representative number of students is 20): $1 - (0.579/20 + 0.098 + 0.065) / (0.582/20 + 0.256 + 0.137) = 0.55$ and at the *school level* the equation is (the representative number of classes is 3 and students is 20): $1 - (0.579/60 + 0.098/3 + 0.065) / (0.582/60 + 0.256/3 + 0.137) = 0.54$. Taking the social capital characteristics into account,

the explained variance increases at the individual level for language achievement with 2.5 percent and for deviant behavior with 5.8 percent.

Conclusion and discussion

When we look at the results of the analyses presented here, the general picture seems to be that social resources have little substantial effect on educational output. More precisely formulated, our analyses have led to the conclusion that social capital, measured with various measurements of concepts of social capital from the functional community tradition, has no effect on language and math achievement in many cases, and only a weak effect in some cases. The strongest effects have been found for deviant behavior (petty crime), an indicator of the social benefits of education.

The analyses were carried out in two phases. Using bivariate correlations, in the exploratory phase, the relations between a series of measurements of social capital and the three effect measures were determined. We paid attention to conceptualizations of social capital based on both the characteristics of the social structure and various forms of social resources residing in the social structure. Besides weak correlations with some types of resources, some social closure measures in particular appear to correlate with the dependent variables. However, for many variables and scales no, or hardly any, relationships were found.

In the second part, the effects of social capital measures that did exhibit at least some relationship with the output measures were estimated again, now with the help of multilevel modeling. After controlling for various structural characteristics of students (gender, ethnicity, school track) the models for some forms of social capital show effects: two intergenerational social closure variables particularly seem to matter. All outcomes are significantly related to one form of social closure: a closer student–teacher relationship goes with higher scores on the language and mathematics tests and with a lower score on deviant behavior. Deviant behavior is also significantly related to a measure of intra-generational closure: students whose best friends attend their school commit fewer petty crimes. Language achievement furthermore varies with two social resource measures: parental value congruence and effective norms for students.

Although some support has thus been found for the presumed contribution of social resources, the results are disappointing. The strength of the effects is small and for most variables no significant effects whatsoever have been found. Moreover, our results show that the least support has been found for the core of the functional community hypothesis, namely that especially a closed network around the school will lead to positive effects. The effects of social capital indicators that ultimately remain mainly concern school-related relationships. By contrast, a tight-knit parent network does not seem to make any difference.

Having said this, we should make several comments about these conclusions. One of these is that a function-specific definition of social capital implies that the extent to which effects may be found, depends on the type of results investigated. Social benefits, for example less frequent deviant behavior, are then a relevant indicator. However, it must be said that general output measures such as language and math achievement only present a limited picture when it comes to drawing conclusions about the contribution of social resources to educational achievement. Perhaps more specific risk variables, for example school dropout or repetition of a grade, are more sensitive to effects of social capital. This would correspond with the assumption made by Coleman and Hoffer (1987) and is supported by earlier research among secondary school students in the Netherlands *(*cf. Bosker, Dijkstra and Peschar 1995).

These remarks also have a wider relevance. In educational settings, social capital in the form of social closure seems particularly relevant to the reinforcement of mechanisms related to motivation, discipline, and interventions aimed at making an effort at school. These are important mechanisms, but a successful school career also depends on other resources. Morgan and Sørensen (1999), for example, make a distinction between 'norm-enforcing schools', in which social closure supports child monitoring and the upholding of norms, and 'horizon-expanding schools' where most of the parents' social ties exist outside the community around the school and provide access to resources in the wider community. Optimum transitions during the school career, for example when transferring to other forms of education or selecting graduation subjects, are an important part of successful participation in education, but these would perhaps benefit more from information obtained from a wider social context. Such effects have not been included in our analyses. Thus, if we are to improve our insight into the contribution of social capital to educational output, research encompassing a wide range of success measures is important. A logical following step is to explore whether actual networks of relationships between parents and students appear and how these influence educational outcomes, both in terms of achievement and wider social outcomes. In this perspective it may also be relevant to investigate the mechanisms behind the firmly established empirical relationship between the occupational level of the parents' best friends and educational outcomes of students. It is still unknown whether this link can be interpreted in terms of social capital (see for instance De Graaf 1987).

In the meantime, however, our analyses show that with respect to the concept of a functional community, other avenues of research should probably be looked into if substantial contributions of social closure are to be measured.

Appendices 1 to 5 (list of items and scales)

1. Intergenerational social closure (according to student): average sum score (1–4) of:

Student–parent–parent relationships: school-related (alpha = 0.75)
– Parents of student's classmates know student
– Parents of student know classmates of student
– Parents of student know parents of student's classmates
Student–parent–parent relationships: not school-related (alpha = 0.67)
– Parents of student know parents of best friends of student
– Parents of student's non-school peers know student
– Student knows parents of non-school peers
Teacher–parent relationships (alpha = 0.63)
– Teachers of student know parents of student
– Parents of student know teachers of student

2. Intergenerational social closure (according to parents): average sum score (1–4) of:

Student–parent–parent relationships: school-related (alpha = 0.72)
– Parents of student know classmates of student
– Parents of student know parents of student's classmates
Student–parent–parent relationships: not school-related (alpha = 0.83)
– Parents of student know friends of student
– Parents of student know parents of student's friends
– Parents of student know student's weekend peers
– Parents of student know parents of student's weekend peers
Teacher–parent relationships (alpha = 0.74)
– Teachers of student know parents of student
– Parents of student know teachers of student

3. Student–teacher relationship (according to student): average sum score (1–4) of scale with the following items (alpha = 0.71):

– Teachers like student
– Teachers really care about student's welfare
– Some teachers dislike student
– Teachers are distant from student
– Student really feels involved with classmates and teachers

4. Information: parents' access to school-related information (according to parents): average sum score (1–4) of scale with the following items (alpha = 0.81):

– Parents of student talk to other parents about their child
– Parents of student talk to other parents about the teachers
– Parents of student talk to other parents about other students
– Parents of student talk to other parents about the school management

5. Value congruence: presumed correspondence with opinions of parents (according to parents): average sum score (1–4) of scale with the following items (alpha = 0.76):

The parents of student believe they have roughly the same opinions as the parents of their child's classmates concerning. . .
– . . . what is important in life
– . . . political subjects
– . . . schooling and child rearing
– . . . religion and existential beliefs

Notes

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1 In the research literature such samples are usually described as 'judgment samples' that are suitable for instrument development and testing of hypotheses. An important condition is that all relevant cells are sufficiently filled, so that the effect of relevant variables indeed can be shown. The composition of the sample is not representative for the Netherlands and does not allow us to generalize and to estimate population parameters. But that is not the goal of this study.
2 Pearson's r: * $p < 0.05$ and ** $p < 0.01$ (two-sided).
3 The two tests have been developed as part of the large-scale national longitudinal cohort study in secondary education (VOCL). The reliability of the language scale is 0.82, of the mathematics scale 0.79.
4 Because the sum score of deviant behavior did not follow the normal distribution, this variable was converted to a $\log_{10}$ logarithmic score to create a more normal distribution for the multilevel analyses described below.
5 Incidentally, Coleman and Hoffer (1987: 6) regard social-structural consistency as an ideal type 'representing a pure case of a certain form of social organization. But is has no mechanisms for change, and it may be dull or oppressive to those embedded within it.'
6 These concern items measuring teachers and students meeting outside the school context, parents already knowing teachers before they selected the school in question for their child, and students knowing coaches and youth volunteers, etc. of the sports clubs and associations, etc. before they became a member. In most cases, the r for these items too was not significant (at most 0.10 or lower).

7 The item 'The children of the parents' friends attend the same school' does not correlate with the two educational achievement variables. The deviant behavior variable presents a small correlation in the expected direction ($r = -0.12$**). The correlation between the 'Parents meet parents of classmates at the sports club, during organized social activities, etc.' and the three output measures is roughly zero.

8 These concerned the following items: cycling to school alone, with others, or with their classmates; participation in sports competitions in a school team; the length of time the student has been in the same class with his classmates; and a scale measuring the way in which the student experiences their class. In most cases, the correlations with the output measures are not significant or are extremely weak. An exception is the 'student travels to school with classmates or schoolmates' item, which correlates slightly positively with the language and math scores ($r = 0.14$** and 0.09**) and negatively with the deviancy score ($r = -0.13$**).

9 This concerned items such as 'student also meets classmates at sports activities/club/work/etc.', 'student has classmates among the peers with whom he goes out', and 'student has met his best friends at sports activities/club/work/etc.'. In most cases, the correlations found were not significant or were weak. An exception is the item 'student also meets classmates in the street, in the neighborhood, or at work', which had modest negative correlations with academic achievement ($r = -0.10$** to -0.21**) and a positive correlation between work and deviant behavior ($r = 0.12$**).

10 This concerned items such as 'Will your parents find out that you have skipped classes if you do not tell them?'.

11 Examples of items that measure access to information about network members (presented to both parents and students) are: 'I know what jobs parents of classmates hold', and 'My classmates would find out if something was the matter with my parents, even if I would not to tell them'.

12 As was the case with the extent to which parents believe they share ideas with other parents, this also concerned items querying what is important in life, political convictions, schooling and child rearing, and religion and existential beliefs. Because of the modest correlation ($r = 0.23$**) between the scales 'presumed correspondence with ideas of other parents' and the 'presumed correspondence with ideas of teachers', the initially separate scales have been retained, while the latter scale has been omitted in the rest of the analyses.

13 The parents' norm congruence was measured with the following items: 'Parents agree with the school rules', and 'Parents usually agree with the school when it meets out sanctions'.

14 This concerns items such as the imposition of sanctions by the school after a student has broken the rules, the presence of individuals who care whether students abide by the rules, and the extent to which students experience sanctions imposed by the school as grievous.

15 By the standardizing of the dependent and the continuous predictor variables the interpretation of the results is clearer. In this way, we can estimate simultaneously the independent effects of different variables on the test score. Keeping the other effects constant, if a student differs one standard deviation from the mean, the effect of a variable will be the amount of change in the dependent variable. The partial regression coefficient of dichotomous variables is the difference between the two categories, for example between boys and girls.

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