Compensating Early School Leave in Germany: The Influence of Social Capital[1]

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Abstract. Early school leavers (ESLrs) perform worse on the labour market than those who have completed at least upper secondary education. It is unclear to what extent this shortcoming can be overcome by resources other than educational credentials. We argue that the disadvantage of early school leavers on the German labour market can be compensated by individual social capital. Using the 2006 wave of the German Socio-Economic Panel study we assess the degree to which this compensation effect is dependent upon the type of social capital considered, with intra-group bonding on the one hand, and inter-group bridging on the other. Results from the hierarchical regression analyses show that both the likelihood of employment and income disadvantage of early school leavers is conditional upon their social capital, but only insofar as it concerns friends rather than family. A support network, which signifies intra-group bonding for both the ESLrs and the higher educated, increases the disadvantages of ESLrs on the labour market. On the other hand, an information network, considered inter-group bridging for the ESLrs, decreases these labour market disadvantages.

Key words: early school leavers, social capital, labour market, Germany, GSOEP.

1. Introduction

Early school leavers (ESLrs) perform worse on the labour market than those that have completed upper secondary education or higher (see for example European Commission, 2005). Although the simultaneous educational expansion and upgrading of occupational structures have created a stable, but ever climbing balance between the offer and demand of labour (Müller & Gangl, 2003), this balance is increasingly difficult to reach for the ESLrs, who's absolute and relative labour market performance deteriorate in what has become a knowledge society.

The ESLrs suffer from a lack of sufficient educational credentials, as well as from a negative labelling – or stigmatization – in the eyes of potential employers (Solga, 2002b, 2002a). It is unclear how

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the undeniable disadvantage of school dropouts, i.e. the *dropout effect*, is influenced by characteristics other than these two interrelated setbacks. As a possible moderator – or indeed compensator – of the ESL disadvantage, the possession of social capital is generally thought to yield positive economic returns, both with respect to labour market access (Aguilera, 2002), and on the labour market itself (Lin, 1999). In this paper, we investigate whether this holds true for ESLrs in particular, and to what extent the dropout effect can be compensated by different types of social capital. For our analyses, we draw upon the German Socio-Economic Panel study, mainly using its 23rd wave (2006).

The scarce literature on the consequences of school dropout often fails to account for background variables such as one's social networks. A reason for this is that many studies in the broader field of transitions from school to work (see for example Müller & Gangl, 2003; Shavit & Müller, 1998; Smyth, Gangl, Raffe, Hannan, & McCoy, 2001) take a cross-national perspective, which often does not allow for the inclusion of comparable social background variables. Taking a single case like Germany allows us to include measurements of social capital and therefore explain the labour market outcomes of ELSrs in more detail, exploring the degree to which various types of social capital affect both the absolute labour market performance of ESLrs, and their labour market performance relative to the ones with at least an upper secondary educational attainment.

There are two arguments to study the individual social capital of ESLrs, both featuring a group-orientation of these school dropouts. The first is the resource argument. The low-skilled ESLrs by definition have limited resources (in terms of human capital), and social capital might help compensate for this setback by providing access to the resources of higher-skilled individuals. The second is the labelling argument. Solga (2002b, 2002a) argues that employers increasingly rely on the sorting function of teachers and schools, resulting in a deteriorated connection between the individual and its environment, and therefore in an exclusion of the lower educated. According to Tilly (1998, p. 245), the indicator of belonging to the lowest educated group has become a 'visible marker for inclusion and exclusion'. The possession of social capital can potentially help overcome the 'stigmatization', especially when bridges are build towards those possessing valuable resources, increasing heterogeneity, and making it more difficult for negative labelling to persist.

We will use the resource argument in the formulation of our hypotheses, following a employee-orientation rather than an employer-orientation. In this line of reasoning, social capital can decrease the disadvantages ESLrs experience on the labour market relative to the ones with a higher educational attainment, insofar as social capital entails the value of a network that is bound to provide useful information on e.g. job interviews and wage negotiations. On the other hand, the ESL disadvantage on the labour market is expected to persist, or indeed aggravate, to the extent that social capital consists of the – often emotional – support that is given by persons one confides in most. The difference, we will argue, is the one of *bridging* and *bonding* social capital, which are, in terms of labour market outcomes, not equally beneficial to the relatively resource-poor group of ESLrs.

The two labour market outcomes studied are the likelihood of employment and the income associated with the employment. Our main objective is to assess the role of both support networks and

information networks in the *dropout effect*. The main research question is: "To which degree is the disadvantage in employment chances and income of ESLrs, relative to the higher educated, conditional upon the individual social capital of the ESLrs?"

2. Theory and hypotheses

Social capital implies that people well equipped with resources – in the sense of their social network and the resources of others they can call upon – succeed better in attaining their goals. Second, people will invest in relations with others because of the expected future value of the resources made available by these relations (Flap & Völker, 2004, p. 6). Van der Gaag and Snijders (2004, p. 200) define individual social capital as: "the collection of resources owned by the members of an individual's personal social network, which may become available to the individual as a result of the history of these relationships". Within social capital, one can identify different types of resources. In this paper, we identify and measure support networks and information networks.

Support networks consist of strong ties and thick trust, resulting in a high degree of closure. Strong ties imply a high degree of intensity, reciprocity and solidarity in a relation (Coleman, 1990). Strong ties create networks containing 'thick' trust (Hughes, Bellamy, & Black, 1999; Newton, 1997). The advantage of thick trust – as opposed to thin trust – is that it is more likely to be enforced. This is due to closure: in a network with total closure the members have ties with all other members (Coleman, 1988). Strong ties, thick trust and closure in a network provide more reliable communication channels; it furthermore protects from exploitation by the members of the network. Lin. et al. (1981) label this 'the strength of strong ties'. A strong support network increases the likelihood of sharing and exchanging resources and therefore yields positive returns (Lin, 2001).

The mechanism behind a support network can be summarized as *bonding* social capital, as opposed to *bridging* social capital. Often it is argued that returns of social capital depend on the different forms of social capital that people possess, such as bonding and bridging (Beugelsdijk & Smulders, 2003; Putnam, 2000; Portes, 2000). Bonding refers to within-group connections, while bridging refers to between-group connections (Gitell & Vidal, 1998; Putnam, 2000; Woolcock & Narayan, 2000; Leonard & Onyx, 2003; Schuller, 2007; Patulny & Svendsen, 2007). The core of bonding social capital is that through strong ties and high levels of trust, closure in a network is realized. This results in beneficial 'within-group' connections.

The second type of network that we identify in this research is an information network. Valuable, and 'new' information in a network positively affects one's labour market outcomes (Granovetter, 1973, 1995; Aguilera, 2002). Information is retrieved by 'spanning structural holes'. Structural holes are gaps in networks and an opportunity to broker the flow of information between people or groups and create an advantage for the individual whose relationships span the holes (Burt, 1992, 2001). This type of networks is often referred to as bridging social capital (Burt, 2002). There is, however, an important difference between information networks and bridging social capital. Whereas an information network implies spanning structural holes as such; bridging presupposes spanning structural holes *across* socio-economic

variables and thereby accessing a network that is fundamentally different. Hence, while an information network provides useful information, the idea of bridging is that even more valuable information comes into reach by building crosscutting ties.

As described above, bridging implies spanning structural holes across socio-economic variables. For ESLrs, an information network is social capital of the bridging type, since structural holes are 'spanned' across the educational and the employment gap. For the higher educated, information networks cannot be characterized as bridging social capital since no structural holes across socio-economic variables are spanned. As a matter of fact, for "non-dropouts", an information network is most likely to be social capital of the bonding type: the measured ties of the individual (educational degree of at least upper secondary and being employed) are proxies for within- rather than between-group relations. Figure one visualizes the relation between bonding and bridging and the measures of social capital we use.

Figure 1: Forms of social capital for ESLrs and the higher educated.

	Early School Leaver	Educational degree > ESL
Support network	Bonding	Bonding
Information network	Bridging	(Bonding)

Since an information network has a different meaning in terms of spanning structural holes, it is likely that its returns are different for ESLrs and the ones with a higher educational attainment. Often it is assumed that whereas bonding is to 'get by', bridging is to 'get ahead' (Narayan, 1999; Putnam, 2000). That is, especially for those at the bottom of the labour market, ties that bridge matter (Granovetter, 1995; Wuthnow, 2002). It indeed appears that networks that in some way can be characterized as the bridging type, have a positive impact on the likelihood to be employed (Aguilera, 2002, 2003; Flap & Boxman, 2001), income (Aguilera & Massey, 2003) or occupational status (Lin, 1999; De Graaf & Flap, 1988). As Flap and Völker (2004, p. 15) put it: a 'relevant question regarding social capital is to what extent do ties remain within social groups, or to what extent are they also crosscutting and connect the resource-rich with the resource-poor?'

Following the bonding and bridging argument, we expect information networks to be more effective for ESLrs than for the higher educated. ELSrs who do manage to build bridges with the resource–rich not only perceive positive returns, they benefit significantly more than the resource-rich connecting with other resource-rich. Since bridging social capital connects to valuable and new opportunities, for ESLrs this is truly 'getting ahead'. Hence, for ESLrs, an information network *does* contribute to upward mobility on the labour market. As a result, we hypothesize:

Hypothesis 1

"The effect of an information network on one's employment chances and income is stronger for the ESLrs than it is for the higher educated, corresponding with a decreasing disadvantage of ESLrs on the labour market."

On the other hand, we expect bonding to be less effective for ESLrs than for the ones with a higher educational attainment. The argument runs counter to that of bridging social capital: whereas bridging ties create opportunities, closure in a network does not, as information circulates without being renewed. That is, ESLrs are relatively isolated from the labour force that is in control of the most valuable resources. Lin (2000) for example argues that there is inequality in social capital, i.e. there are different returns for different groups. According to Lin, there is inequality in social capital when people cluster around certain disadvantaged socio-economic characteristics, and when the general tendency is that people associate with people with similar characteristics Hence, for ESLrs, closure is not as beneficial as it is for the non-dropouts. Since little valuable information is available in their network, ESLrs benefit less from bonding than the higher educated. This is the argument stating that 'whereas bonding is to get by, bridging is to get ahead'. We therefore hypothesize the following:

Hypothesis 2

"The effect of a support network on one's employment chances and income is stronger for the higher educated than it is for the ESLrs, corresponding with an increasing disadvantage of ESLrs on the labour market."

3. Data and measurement

The analyses are based on the 2006 wave of the German Socio-Economic Panel study (GSOEP), a household based longitudinal study that started in 1984, and now provides data on German household members for twenty-three consecutive years. The 2006 wave used in this research includes numerous measures of social capital, a module that is aptly titled 'Persons to Confide in and Social Networks'. Our sample consists of all persons born in 1960 or later, who are currently not in education and not retired. Furthermore, only those individuals are selected who responded to the various questions about their social networks. As a result, our sample covers 8.352 individuals with respect to the likelihood of employment and 5.105 individuals for the analysis of income. In table one, an overview of the sample is presented.

We analyze two dependent variables: the likelihood of employment, and income. In this study we consider the likelihood of employment (including the part time employed), as opposed to the likelihood of unemployment. The so-called 'inactives', including students and those in military service are deleted from the sample. The income associated with the employment is operationalized as the natural logarithm of the current net monthly labour income in euros. Our two hypotheses are based on interaction terms. For a better interpretation of the interaction terms, we therefore calculate marginal effects and follow the suggestions as raised by Brambor, Clark and Golder (2006).

Table 1. The reseach sample according to ESL and sex.

	Sample likelihood of employment			Sample income		
	ELSrs	Educational degree >ELSrs	Total	ELSrs	Educational degree >ELSrs	Total
Men	858	3.066	3.924	326	2.290	2.616
Women	936	3.492	4.428	324	2.185	2.489
Total	**1.794**	**6.558**	**8.352**	**630**	**4.475**	**5.105**

Source: GSOEP 2006

Early school leaving is measured with the International Standard Classification of Education (ISCED, see UNESCO, 1997). Following definitions used by EUROSTAT and OECD, an ESLr is currently not in education or training, and has at most ISCED level two, which is anything below upper secondary education[2]. This indicator is the most commonly used measurement of early school leaving in the EU (European Commission, 2005). To account for the somewhat limited ISCED classification of ELSrs, and to better take into account the German educational system, we include three other variables capturing human capital related skills, covering whether or not the respondent *(1)* had vocational training, *(2)* did a training or apprenticeship and *(3)* went back to school at a later age. While the first applies to one's entire educational career retrospectively, the second and third concern only the years during which the respondent was included in the GSOEP, therefore underestimating the occurrence of training and re-schooling. Nevertheless, all three controls help refine the definition of ESL adopted in this research.

For the measurement of social capital, we make use of the items included in the 2006 module 'Persons to Confide in and Social Networks'[3]. Four measures of social capital are constructed. With respect to support networks, we create two scales in the following way. In the 2006 module, respondents are asked to label up to three people in their network who can offer different kinds of support (see figure two). These are split up in either family or non-family ties. The differentiation into family and non-family ties is useful since it is generally found that different types of ties yield different returns (Granovetter, 1973; Weimann, 1983). For the construction of the scales, we used a non-parametric IRT model: the so-called 'Mokken scaling method' (Mokken, 1996; see the appendix for the construction of the scales), which results in two cumulative scales (see figure A.1 in the appendix).

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[2] EUROSTAT and OECD differ in their dropout indicator, in that EUROSTAT considers individuals between the ages of 18 and 24, while OECD restricts its indicator to the ages of 20 to 24. As our analyses follow a life course perspective, mapping out the longitudinal *dropout effect*, such age restrictions are not included.
[3] This module, as opposed to many other surveys on social capital, contains items that provide rather detailed information with respect to existing ties of ego. Therefore, we are able to measure social capital based on the actual ties people have, rather than with attitudinal measures that are often used as a proxy for social capital (e.g. White & Glick, 2000; Fukuyama, 1995; Beugelsdijk & Smulders, 2003).

Figure 2. The items used to measure social capital.

Support network	*Ties*
Who supports your advancement in your career or educational training and fosters your progress? Who you can tell the truth even if it is unpleasant? If you were to need long-term care, whom would you ask for help? With whom do you talk to about personal thoughts and feelings, or about things you wouldn't tell just anyone?	People who could be important for you in some way: up to three relatives or non-relatives
Information network Highest educational degree attained Employment status	*Ties* Circle of friends and acquaintances: up to three persons outside household personally important to you: relatives or non-relatives

Source: GSOEP 2006

Information networks are measured with two items for which respondents are asked to think of up to three people outside their household who are personally important to them. Two items are included: the employment status, and the educational attainment of the mentioned persons. Ties are coded when the person mentioned is employed (as opposed to unemployed, retired, in school, or no tie exists) or when he/she has an educational degree higher than ISCED-2 (versus an educational degree lower than that, an unknown degree, or no tie exists). Also for the information network, ties are split up in relatives and non-relatives.

Table 2. Descriptive statistics social capital[4].

		Early School Leavers		Educational degree >ELSrs		Total	
		Mean	SD	Mean	SD	Mean	SD
Support networks	Family	0.53	0.23	0.52	0.22	0.52	0.22
	Friends	0.10	0.12	0.11	0.13	0.11	0.13
Information Networks	Family	0.16	0.21	0.22	0.24	0.21	0.23
	Friends	0.28	0.25	0.40	0.30	0.38	0.30

Source: GSOEP 2006

In table two the descriptive statistics for the four social capital scales are presented. On average, ESLrs and higher educated respondents appear to have more or less similar scores on the support network scale, while they clearly differ on the information network scale. Despite having an equal sized support network, that of the higher educated is expected to be much more beneficial on the labour market than that of the ESLrs. Conversely, the information network of ESLrs is expected to be much more beneficial than that of the higher educated, even though the average score of the latter on the information network scale is considerably higher.

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[4] Numbers are based on the sample used for the analysis of the likelihood of employment (N=8.352).

4. Main Findings

The findings discussed in this paragraph are the result of two different two-level random-effect models, regressing the likelihood of employment and income respectively. Both models apply to men and women. Furthermore, both models are built in the exact same way, starting with early school leave plus the essential controls (model one), then adding the measures for social capital (model two), the interaction terms (model three), and, finally, the remaining controls (model four).

As a criterion for distinguishing between essential and other controls, we consider the degree to which they are expected to affect the particular dependent variable, which constitutes their relevance in modelling the dependent variable accurately. The number of years since leaving school is an essential part of this accurate modelling, just as the sex of the respondent, and whether or not one works full time (when employed). The remaining controls are not so much expected to affect the dependent variable, as they are to influence the effect of the other independent variables on the dependent variable. For example, the controls that help refine the definition of ESL are not expected to improve the accuracy of the model, but are expected to influence the dropout effect, and the compensation strength of social capital. All conclusions in paragraph five will be based on the two final models, with all controls accounted for.

The data is not representative at the level of the Federal States. It is therefore difficult to establish the actual effect of living in different states on ones employment likelihood or income. Still, it is important to acknowledge the non-random variation of these dependent variables between the sixteen *Bundesländer* that Germany consists of. While featuring only individual level variables, the analyses are indeed multilevel, accounting for an aggregate level of sixteen Federal States.

Table 3. Two-level random-effect model regressing the likelihood of employment, odds ratios.

	Model 1	Model 2	Model 3	Model 4
Early School Leave	.375***	.495***	.458***	.502***
	(.025)	(.034)	(.087)	(.102)
Number of years since leaving school				
0-5 years	*reference*	*reference*	*reference*	*reference*
6-10 years	3.581***	3.744***	3.739***	2.999***
	(.322)	(.347)	(.349)	(.317)
11-15 years	4.476***	4.862***	4.871***	4.003***
	(.406)	(.461)	(.463)	(.449)
16-20 years	4.827***	5.411***	5.463***	4.498***
	(.413)	(.489)	(.496)	(.503)
21-25 years	7.606***	8.948***	8.993***	7.380***
	(.690)	(.861)	(.868)	(.877)
26-30 years	8.621***	10.639***	10.668***	8.612***
	(.852)	(1.117)	(1.123)	(1.094)
Sex (1=Female)	.483***	.460***	.460***	.456***
	(.027)	(.026)	(.027)	(.027)
Support network family	-	.971	1.013	1.080
		(.131)	(.159)	(.172)
Support network friends	-	2.108**	2.932***	2.978***
		(.500)	(.808)	(.833)

			Table 3 continued
Information network family	-	3.480***	3.376***	3.577***
		(.487)	(.541)	(.578)
Information network friends	-	4.579***	3.689***	3.810***
		(.538)	(.489)	(.512)
ESL * Support Network Family	-	-	.829	.761
			(.239)	(.222)
ESL * Support Network Friends	-	-	.277*	.278*
			(.148)	(.151)
ESL * Information Network Family	-	-	1.081	.921
			(.356)	(.305)
ESL * Information Network Friends	-	-	2.685***	2.060*
			(.763)	(.592)
Had vocational schooling	-	-	-	.861
				(.075)
Did training/apprenticeship	-	-	-	1.670***
				(.128)
Went back to school	-	-	-	.903
				(.070)
Non German nationality	-	-	-	.856
				(.088)
Resident former DDR	-	-	-	.630***
				(.051)
Married	-	-	-	.913
				(.064)
Parental ESL				
At most one parent ESLr	-	-	-	_reference_
Missing parent info	-	-	-	.943
				(.093)
Both parents ESLrs	-	-	-	1.242**
				(.085)
Log-Likelihood	-4161.4	-4048.9	-4040.8	-3994.1

N=8.352, levels of significance: * p < .05, ** p < .01, *** p < .001. Source: GSOEP 2006.

In table three, every variable's coefficient represents the _odds_ of being employed, as opposed to being unemployed. The negative effect of ESL in model one takes into account the increasing employment likelihood with the years after leaving school, and the fact that women are overall less likely to be employed than men. The direct effect of individual social capital on the likelihood of employment, as added in model two, varies between the types of social capital analyzed. First, networks involving friends are more influential than those involving family. Support networks involving family do not even significantly affect the employment likelihood at all. When it comes to labour market opportunities, the chances are that an "achieved" friendship is indeed more influential than an "ascribed" family member. Second, information networks are more effective than support networks. Regardless of the bonding and bridging distinctions, information networks are more labour market specific than support networks.

Model three adds the interaction terms, which enable us to both interact social capital with the effect of ESL on the likelihood of employment, and interact ESL with the effect of social capital on the

employment likelihood. As hypothesized, support networks worsen the employment disadvantage of ESLrs, while information networks decrease this disadvantage. This is only statistically significant, however, when it involves a friends network, and not when it involves a family network. The main effects of social capital remain more or less robust up to model four, and neither are the interaction terms substantially affected by the addition of the remaining controls.

Only three of the controls added in model four significantly affect the employment likelihood directly. Having done a training or apprenticeship during any of the previous GSOEP waves increases the likelihood of being employed in the 2006 wave. The other educational differentiations do not significantly affect the employment likelihood, but their addition nevertheless results in a dropout effect that is arguably more realistic than its model one starting point.

Residents of the former DDR (East Germany) are less likely to be employed than Germans living in the former FDR (West Germany), which does indeed suggest some non-random variation at the level of the Federal States, that is taken into account by this two-level hierarchical model[5]. Model four even suggests that it matters more in which *Bundesland* you are living than which nationality you have, as a non-German nationality does not affect the employment likelihood significantly.

Finally, having both a father and a mother who ended their educational track before reaching the upper secondary level increases the likelihood of being employed. Although surprisingly at first sight, this is where the difference between various labour market outcomes becomes most apparent. When parents are ESLrs themselves, it is likely that they know of the effort it takes to find a job and to remain employed throughout one's career. This experience is useful to the child, whether or not the child is an ESL itself. As we will see, no such help can be expected from the lowest educated parents when it comes to ensuring a certain wage level, once employed.

Looking at the interaction terms in model four, it shows that the direct effect of a support network is not just weaker for ESLrs, it is even negative (illustrated in figure three). While the higher educated profit from their support networks (with 2.978 as the odds of being employed), ESLrs actually suffer from their own support networks (with an odds of 2.978*.278=.828). Correspondingly, the ESLr's odds of being employed are higher in case of a minimal support network (.502), than in the event of a maximal support network (.502*.278=.140). In other words, a support network increases the ESL disadvantage in employment likelihood, i.e. increases the negative dropout effect.

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[5] Ideally, we would want to ascertain the mechanisms behind this effect, adding level-two (Federal State) variables to the regression model. However, the data is not representative at the aggregate level, which would result in the over- or underestimations of the level-two variables. It is, moreover, not our purpose to go into the differences between the Federal States when in comes to employment rates and income levels. Rather, we have included the dummy to account for some of this variation, which makes the other coefficients more trustworthy and improves the model fit.

Figure 3. The marginal effects of a support network friends on the likelihood of employment for ESLrs (dropouts) and individuals with a higher educational attainment (non-dropouts), in odds ratios.
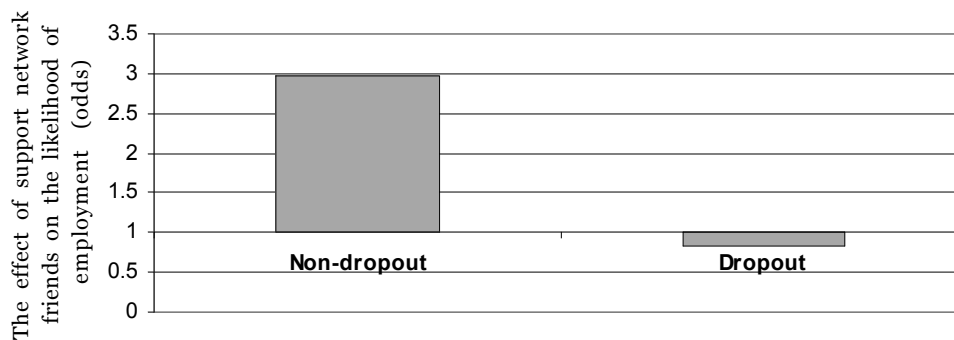
Source: GSOEP 2006 (calculation from table 3, model 4).

The beneficial effect of an information network is considerably stronger for ESLrs (an odds of 3.810*2.060=7.849), than it is for the ones with a higher educational attainment (ad odds of 3.810), confirming the bridging social capital argument (figure four.). Correspondingly, the odds of being employed becomes much more likely for the ESLr as the information network is stronger, decreasing the ESL disadvantage in the likelihood of employment.

Figure 4. The marginal effects of an information network friends on the likelihood of employment for ESLrs (dropouts) and individuals with a higher educational attainment (non-dropouts), in odds ratios.
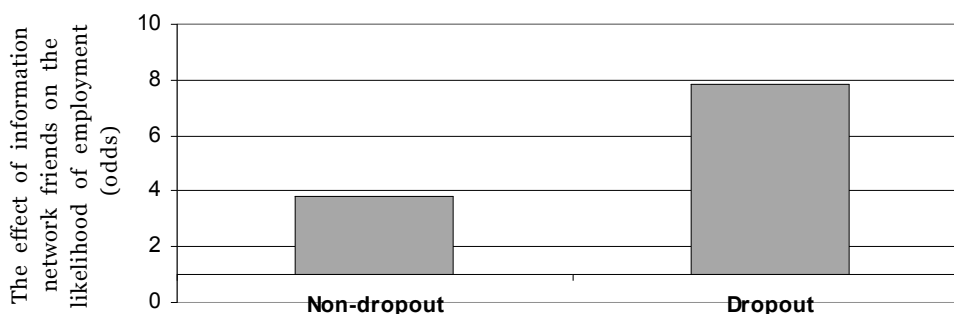
Source: GSOEP 2006 (calculation from table 3, model 4).

Figure five illustrates how early school leave is compensated by an information network involving friends. The dropout effect is fully conditional upon the existing information network. ESLrs with the highest score on the information network scale found in this research sample have even eliminated their disadvantage in employment likelihood relative to the ones with a higher educational attainment, confirming their benefits of bridging with the resource-rich. Bonding within the resource-poor, on the other hand, makes the ESL disadvantage in employment chances only worse, i.e. strengthens the negative dropout effect.

Figure 5. The marginal effects of ESL on the likelihood of employment for all values on the support network scale and information network scale (both involving friends), in odds ratios.
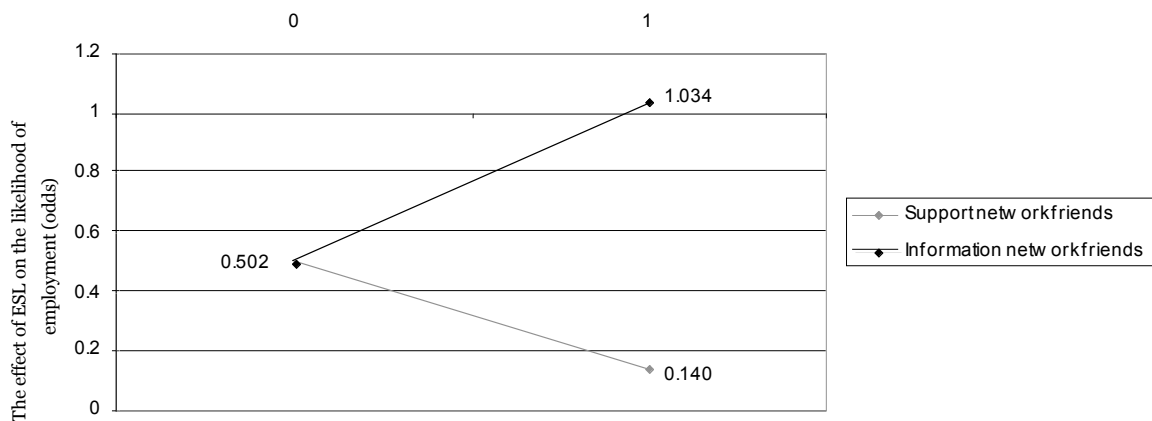
Source: GSOEP 2006 (calculation from table 3, model 4).

For the ESLrs, the difference between bonding and bridging is an important one. Support networks negatively affect their employment chances, both in absolute terms (figure three) and relative to the position of the higher educated (figure five). Information networks positively affect the employment likelihood of ESLrs, both in terms of their absolute chances (figure four.) and concerning their chances relative to the higher educated. The gap in employment chances between dropouts and non-dropouts increases with the intra-group bonding of ESLrs, and decreases with the inter-group bridging of ESLrs towards the resource-rich.

Table 4. Two-level random-effect model regressing the natural logarithm of income, standardized coefficients.

	Model 1	Model 2	Model 3	Model 4
Early School Leave	-.259***	-.210***	-.134*	-.267***
	(.024)	(.024)	(.066)	(.067)
Number of years since leaving school				
0-5 years	*reference*	*reference*	*reference*	*reference*
6-10 years	.147***	.164***	.154***	.196***
	(.032)	(.032)	(.032)	(.033)
11-15 years	.313***	.335***	.325***	.346***
	(.031)	(.031)	(.031)	(.034)
16-20 years	.426***	.451***	.441***	.435***
	(.030)	(.030)	(.030)	(.033)
21-25 years	.435***	.470***	.460***	.449***
	(.029)	(.029)	(.029)	(.033)
26-30 years	.437***	.482***	.472***	.472***
	(.029)	(.030)	(.030)	(.034)
Sex (1=Female)	-.197***	-.209***	-.210***	-.201***
	(.017)	(.017)	(.017)	(.017)
Works full time	.979***	.964***	.963***	.992***
	(.019)	(.019)	(.019)	(.019)

Table 4 continued.

Support network family	-	-.010	.005	-.052
		(.037)	(.039)	(.039)
Support network friends	-	.276***	.350***	.321***
		(.062)	(.065)	(.064)
Information network family	-	.232***	.227***	.171***
		(.038)	(.040)	(.039)
Information network friends	-	.271***	.256***	.200***
		(.029)	(.031)	(.031)
ESL * Support Network Family	-	-	-.116	-.039
			(.101)	(.099)
ESL * Support Network Friends	-	-	-.765***	-.656**
			(.205)	(.200)
ESL * Information Network Family	-	-	.040	.066
			(.118)	(.115)
ESL * Information Network Friends	-	-	.135	.205*
			(.093)	(.091)
Had vocational schooling	-	-	-	-.138***
				(.022)
Did training/apprenticeship	-	-	-	-.046*
				(.022)
Went back to school	-	-	-	.072***
				(.018)
Non German nationality	-	-	-	-.059
				(.030)
Resident former DDR	-	-	-	-.193***
				(.023)
Married	-	-	-	.146***
				(.017)
Tertiary sector	-	-	-	.096***
				(.015)
Parental ESL				
At most one parent ESLr	-	-	-	*reference*
Missing parent info	-	-	-	*-.100****
				(.028)
Both parents ESLrs	-	-	-	*-.029*
				(.019)
Constant	6.147***	5.938***	5.939***	6.074***
	(.039)	(.049)	(.049)	(.046)
Log Likelihood	-4079.2	-4012.3	-4005.0	-3857.8

*N=5.105, levels of significance: * p < .05, ** p < .01, *** p < .001. Source: GSOEP 2006.*

Similar to the likelihood of employment, income steadily increases with the number of years since leaving school, and is overall significantly lower for women than for men. A new addition in model one is working full time, which greatly affects the income level. Nevertheless, ESL upholds its negative effect on income in spite of these, and indeed later, additions of control variables.

We again find no significant effect of a support network involving family. With respect to income, it does, however, not directly follow that an information network matters more than a support network. On the contrary, a support network involving friends has a slightly stronger effect than both

types of information networks, and this difference becomes only more apparent as more variables are added in model three and model four.

The interaction terms added in model three follow more or less the same pattern as in table three, with the exception of the one featuring the information network of friends, which becomes statistically significant only in model four. What is most striking however, is the strength of the interaction term concerning the support network of friends, on which the effect of ESL on income seems greatly dependent.

Before summarizing the interactions, and the degree to which the dropout effect can be compensated through social capital, it is interesting to look at the controls added in model four. Although they serve more as a means to make the findings central to this research more realistic, they yield significant direct effects on income themselves, albeit relatively small. While re-schooling did not affect employment chances significantly, it does positively influence one's income level. Having done a training or apprenticeship during any of the previous GSOEP waves – if interviewed before – negatively affects the income. This might be due to a selection effect, since it is more likely that it applies to the ones that left school only recently, than to the ones that left school a long time ago, and findings show that the latter have an overall income level that is considerably higher than that of the first[6]. Vocational schooling, the final control that compensates for the somewhat limited ESL definition, has a negative effect on income[7].

Similar to the likelihood of employment, the East-West residency matters, while a non-German nationality does not. Being married, as opposed to single, widowed, divorced, or separated, has a positive effect, while it did not yield a significant effect on the likelihood of employment. A new addition in model four is working in the service sector, which appears to be slightly more beneficial to one's income than working in the primary or secondary sector of industry. Finally, the ESL status of the parents has only a very ambiguous effect on income. In the case of missing information on the parental ESL, the income is significantly lower. It does not, however, follow that the individuals not providing this information are likely to be the children of ESLrs, since the corresponding variable included in model four does not affect the income significantly.

Illustrating the marginal effects of a support network involving friends on one's income for ESLrs and the higher educated (figure six) shows that this main effect is not only stronger for the ones with a higher educational attainment. The effect of this support network is even affecting the income negatively in the case of ESLrs. This finding again shows that bonding is indeed more beneficial in a resource-rich group than it is in a resource-poor group, as hypothesized in paragraph two.

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[6] This explanation does, however, contradict the findings concerning the likelihood of employment, which showed a positive effect of having done a training or apprenticeship.
[7] When including an interaction term to examine the overall negative effect of vocational schooling on income, we find that vocational schooling is indeed decreasing the income of the higher educated, but that it increases the income of the ESLrs. Again, this is due to a selection effect, since vocational schooling covers the most advantageous (i.e. the highest educated) early school leavers, and the lowest educated among the ones with at least upper secondary education.
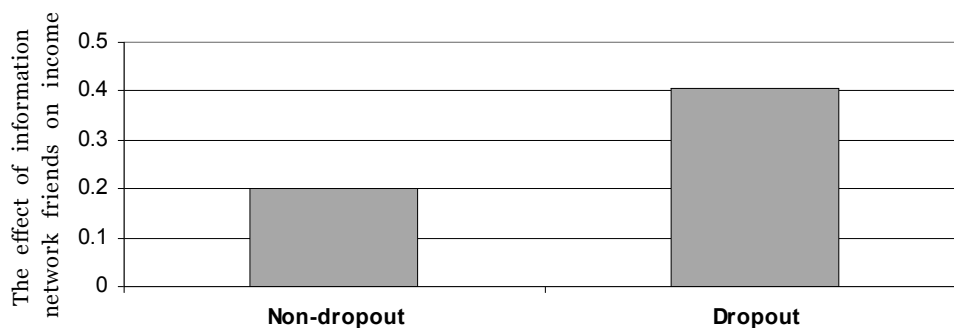
Figure 6. The marginal effects of a support network friends on the income for ESLrs (dropouts) and individuals with a higher educational attainment (non-dropouts).
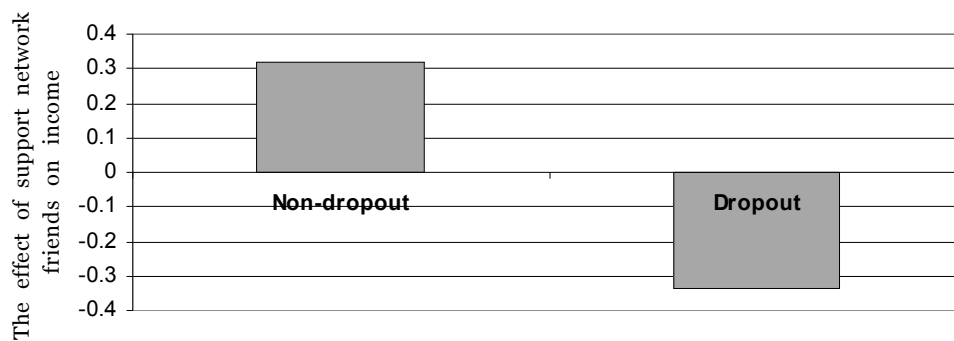
Source: GSOEP 2006 (calculation from table 4, model 4).

Information networks involving friends are more beneficial to the income of ESLrs than they are to the income of the higher educated (figure seven), since they imply the bridging of important structural holes in the case of ESLrs, while this is not necessarily so for the "non-dropouts", for whom information networks can be expected to constitute just another type of bonding social capital.

Figure 7. The marginal effects of an information network friends on the income for ESLrs (dropouts) and individuals with a higher educational attainment (non-dropouts).

Source: GSOEP 2006 (calculation from table 4, model 4).

As a support network is more beneficial for the higher educated than for the ESLrs, this type of social capital aggravates the income disadvantage of the latter, strengthening the negative dropout effect that is apparent from model one onwards. By the same token, an information network moderates this income disadvantage, since it is more beneficial to the income of ESLrs than it is to the income of individuals with a higher educational attainment. This is summarized in figure eight.

Figure 8. The marginal effects of ESL on the income for all values on the support network scale and information network scale (both involving friends).
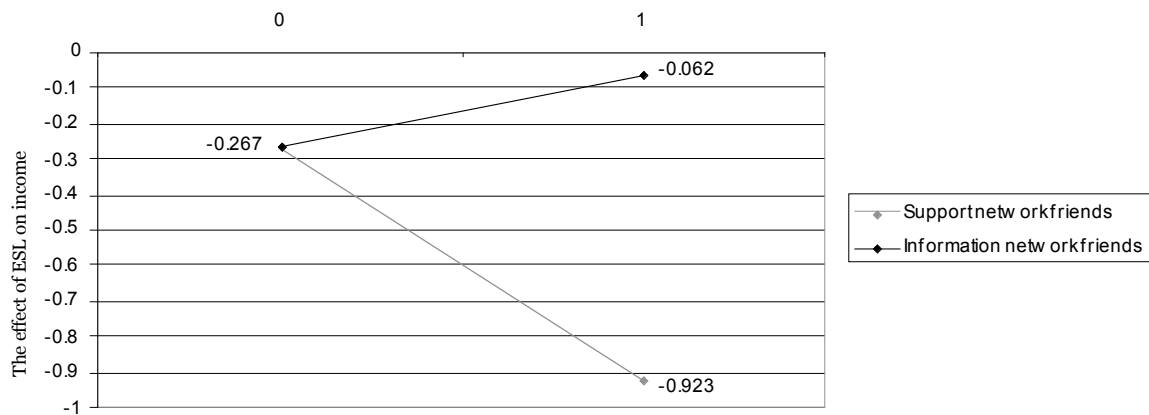
Source: GSOEP 2006 (calculation from table 4, model 4).

The x-axis shows the full variation on both types of social capital, in this case ranging from zero to one, as the scales were recoded accordingly to make the magnitudes of all coefficients in table four comparable. Moving up from the minima on these scales to the maxima corresponds with a change in the main effect of ESL on income. In line with our hypotheses, the compensation effect of social capital fully depends upon the type of social capital that is studied. The income disadvantage of ESLrs is almost entirely conditional upon the existence of an information network involving friends, which highly moderates, and indeed nearly compensates, the negative dropout effect. On the other hand, the same income disadvantage is larger to the extent that the close-by support network – again involving friends – is larger, signifying the level of bonding, which is more beneficial within resource-rich groups than within resource-poor groups.

5. Discussion

The employment chances and income of German ESLrs are highly conditional upon their degree of social capital, both in terms of their absolute labour market performance, and in terms of their disadvantageous position relative to the individuals with at least upper secondary education. First, while a support network (friends) is clearly beneficial for the income and employment likelihood of the higher educated, ESLrs only suffer from this bonding type of social capital. Correspondingly, the negative effect of ESL on both dependent variables aggravates as the support network is more pronounced. This is explained by the fact that bonding is an intra-group type of social capital. Its benefit is therefore fully dependent on the resources already available within the group. Assuming that ESLrs and higher educated individuals belong to two mutually exclusive groups, the first bond in a resource-poor environment, while the latter bond with the resource-rich. The ESLrs are not compensating for their lack of skills and educational credentials, and neither are they building bridges towards new information that can help them during the job allocation process or wage negotiations.

As a second type of social capital, an information network (friends) is beneficial for employment chances and income of both the ESLrs and the higher educated. The latter profit from information networks as just another form of bonding within their resource-rich environment, but the ESLrs actually compensate for their labour market disadvantages, building bridges away from their own group's limited resources. As a consequence, information networks make a larger difference for ESLrs than for the ones with at least upper secondary education. Correspondingly, information networks improve the negative effect of ESL on both the likelihood of employment and income, providing the opportunity to almost fully compensate the dropout effect.

This research has an employee-orientation rather than an employer-orientation. In the discussion on compensating ESL, it would be interesting to establish the actual setback that is overcome, whether this is the limited human capital of employees or the negative labelling by employers. The resource approach is here adopted as the mechanism behind the benefits of bonding and bridging, and by definition, it compensates for the limited human capital of the employees. However, another mechanism behind the benefits of bonding and bridging can be found in the labelling or stigmatization (Solga, 2002b, 2002a) of the ESLrs by the employers. The assumption is then that bonding increases the homogeneity of the ESLrs as a group, while bridging would increase the heterogeneity. A homogenous group with limited resources is more easily labelled negatively than a heterogeneous one, again suggesting that the ESLrs had better build bridges towards the non-ESLrs, than bond with their fellow school dropouts.

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Appendix

Construction of the scales for support networks using cumulative scaling

For the construction of the support scales, Item Response Theory (IRT) was used, rather than factor analysis, which assumes interval level measurement. IRT is based on the order of the proportion of people that gives a positive response to an item. The scale is based on the pattern in the items regarding the number of people that gave a positive response. Since factor analysis is based on correlation logic it does not take into account the fact that items may be related in a cumulative way. This may misrepresent the actual structure of the data (see also Van Schuur, 2003; Van der Eijk, 2007). For example, it may be the case that some items within a concept are less frequently positively responded to. Although representing the top end of the scale, in a factor analysis, due to a lower correlation, this item might not be included. IRT does account for an ordinal structure in the data and is therefore more suitable for the measurement of social capital which if often understood in terms of 'more' and 'less' (Van der Gaag & Snijders, 2004).

To measure social support networks, a non-parametric IRT model for finding cumulative scales is used: the so-called 'Mokken scaling method' (Mokken, 1996; Sijtsma & Molenaar, 2002). This resulted in two scales, which were tested (see figure A.1). The most important measure that a set of items has to meet to form an acceptable Mokken scale is Loevinger's Homogeneity coefficient (H). According to Mokken, an H of >.30 is a useful scale (Mokken, 1996; Van Schuur, 2003). For both scales, H is just above .30, which means the scales can be used, but are not very strong. The actual scale consists of the sum of the items. Before summation, missing values for the individual items were imputed using two-way imputation (described in Sijtsma & Van der Ark, 2003). The imputation is done as follows (Van Ginkel & Van der Ark, 2007, p. 2): 'Let PM_i be the average of all observed scores of respondent i, let IM_j be the average of all observed scores on item j, and let OM be the average of all observed scores on all items and all persons. The missing value of respondent i on item j is then based on $X_{ij} = PM_i + IM_j - OM$'. Imputation was done for all cases with less than 60% of the scale items missing. Those cases with more than 60% of the values missing were deleted.

Figure A.1. Items support networks

N=8.352	Relatives		Non-relatives	
	Mean	*Item H*	*Mean*	*Item H*
Who supports your advancement in your career or educational training and fosters your progress?	.82	.29	.26	.26
Who you can tell the truth even if it is unpleasant?	1.54	.37	.33	.40
If you were to need long-term care, whom would you ask for help?	1.77	.39	.22	.25
With whom do you talk to about personal thoughts and feelings, or about things you wouldn't tell just anyone?	1.78	.38	.38	.40
Homogeneity coefficient (H)	H = .33		H =.33	
Reliability	Rho = .62		Rho =.64	

Source: GSOEP 2006.