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The effects of ethnic and social segregation on children and adolescents: Recent research and results from a German multilevel study

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Dietrich Oberwittler

**The Effects of Ethnic and Social
Segregation on Children and
Adolescents: Recent Research and
Results from a German Multilevel
Study**

Discussion Paper Nr. SP IV 2007-603

Abstract

This paper, in a first part, reviews current literature on the effects of ethnic and social segregation on children and adolescents. In a second part, it reports results of an empirical study on this issue conducted by the author in two German cities.

In recent research, the effects of segregation have been framed as possible ‘contextual effects’ of neighbourhoods, i.e. as separate factors beyond the individual effects of social disadvantage. The paper discusses theoretical and methodological underpinnings of recent studies that use nested samples of individuals in different types of neighbourhoods and multilevel analyses. While there is some evidence of detrimental effects of segregation on outcomes like health, education and crime, this mostly comes from the US. In Europe few relevant studies have been conducted and support for these hypotheses is much weaker.

Results from a German multilevel study based on a sample of more than 5000 adolescent respondents in 61 neighbourhoods stress the importance of peer groups and ‘agency’ in shaping the influence of neighbourhoods on individual attitudes and behaviour. Social segregation in general seems to be more salient than ethnic segregation, and schools turn out to be important as developmental contexts independent from the residential neighbourhoods. Contrary to theoretical expectations, neighbourhood effects seem to be mainly restricted to native German adolescents, and girls show different patterns of effects than boys. Given the patchy evidence, more research on the overlapping contexts of schools and neighbourhoods in a developmental perspective is required.

Zusammenfassung

Dieses Arbeitspapier berichtet über die aktuelle Forschungsliteratur zu den Auswirkungen ethnischer und sozialer Segregation auf Kinder und Jugendliche sowie über die Ergebnisse einer empirischen Studie zu diesem Thema, die der Autor in zwei deutschen Großstädten durchgeführt hat.

In der gegenwärtigen Forschung werden die Auswirkungen von Segregation als mögliche Kontexteffekte des Stadtviertels jenseits der individuellen Effekte sozialer Benachteiligung anhand geschachtelter Stichproben von Individuen in unterschiedlichen Stadtvierteln und mit Hilfe der Mehrebenenanalyse untersucht. Die theoretischen und methodischen Grundlagen dieses Ansatzes werden diskutiert. In den Ergebnissen gibt es einzelne empirische Hinweise auf die Existenz nachteiliger Effekte der Segregation in den Bereichen Gesundheit, Bildung und Kriminalität, doch stammen diese überwiegend aus U.S.-amerikanischen Studien, während europäischen Studien in diesem Bereich seltener sind und weniger eindeutige Ergebnisse hervorgebracht haben.

Die Ergebnisse der deutschen Mehrebenen-Studie, die auf einer Stichprobe von mehr als 5000 Befragten in 61 Stadtvierteln basiert, unterstreichen die Bedeutung der Gleichaltrigengruppen und der individuellen Handlungsmacht für die Gestaltung der Stadtvierteleinflüsse auf Einstellungen und Verhalten der Individuen. Soziale Segregation scheint generell bedeutsamer als ethnische Segregation zu sein, und Schulen erweisen sich als eigenständiger Entwicklungskontext, unabhängig vom Wohnkontext. Entgegen theoretischer Erwartungen scheinen Stadtvierteleffekte auf einheimische deutsche Jugendliche beschränkt zu sein, und für Jungen zeigen sich andere Einflussmuster als für Mädchen. Aufgrund des insgesamt uneinheitlichen empirischen Bildes sollten weitere Forschungen unternommen werden, die insbesondere in einer Entwicklungsperspektive die überlappenden Kontexte von Schulen und Stadtvierteln untersuchen sollten.

Zur Person

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1. Introduction

Does segregation or the spatial concentration of social problems cause additional disadvantage for people who are already disadvantaged due to their ethnicity or migration status? This paper discusses the social consequences of living in such areas, with special emphasis on children and adolescents. Detrimental effects of living in concentrated disadvantage are often thought to be potentially more serious for children and adolescents because they are presumably more susceptible to environmental influences, and because these effects may have long-lasting consequences on their future well-being and life chances.

The paper is broadly divided into three parts. First, a theoretical part briefly outlines hypotheses about contextual effects on the psychosocial situation and behaviour of children and adolescents, discussing methodological problems. The second part reviews recent international research findings. The third and final part presents results from my own multilevel study on neighbourhood and school effects on adolescent delinquency.

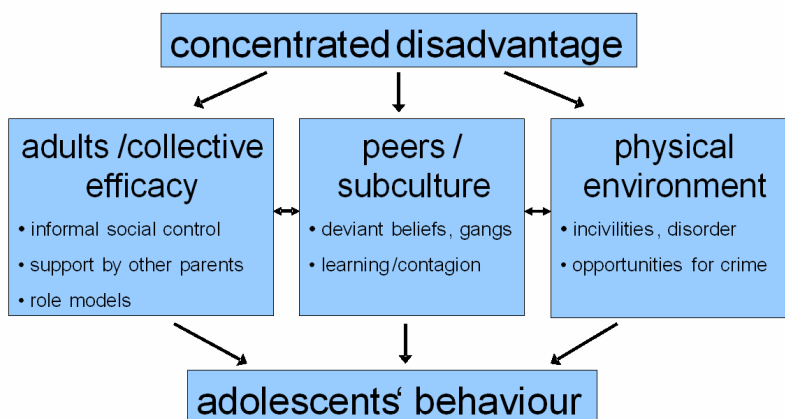
Throughout the paper, I shall pursue a multifaceted approach which regards ethnic and social segregation as closely related but not identical issues. Also important is the role of schools, which is treated as an additional dimension of spatial segregation.

Ethnic and social segregation are basic facts of social life that have been observed since the beginnings of systematic social research in the 19th century. Eroding welfare states, continuing migration in the absence of buoyant labour markets, the noticeably strong exclusionary tendencies in many European countries and in the U.S., as well as the problematic consequences of segregation have gained increasing attention in both the public and academic discourses over the last ten to twenty years. In Germany and in many other European countries, the situation of ethnic minorities and immigrants has been closely linked to issues of social disadvantage, as people with migrant backgrounds predominately come from poorer countries, lack economic and/or educational and cultural resources, and find themselves in the lowest social strata of the host society. Ethnic minorities often live in urban areas with the highest concentration of social problems, as indicated by poverty and unemployment figures. However, disadvantaged natives also live in these areas of concentrated disadvantage, not all of which rank among the worst in terms of economic failure. Much of the research devoted to contextual effects originates in the United States, where the 'ghettoization' of the African-American population and hence the spatial co-occurrence of ethnic and social disadvantage has come to such a high level that scholars have ceased to differentiate between the two. It seems more adequate for the European situation to try to keep this differentiation in mind (Häußermann/Siebel 2004: 151).

2. Research on neighbourhood effects

The basic assumption of ‘neighbourhood effects’ research is that the spatial concentration of social disadvantage aggravates social ills like unemployment, crime, or psycho-social and health problems (Friedrichs 1998; Friedrichs et al. 2003; Jencks/Mayer 1990; Murie/Musterd 2004; Sampson et al. 2002; Leventhal/Brooks-Gunn 2000). Theories of contextual effects – as all theories involving macro-micro-links – should specify the social mechanisms that bring about these effects (Boudoun 1998). There are two main branches of hypotheses about the social mechanisms of this macro-level effect on individual behaviour (see Graph 1).

Graph 1: Social mechanisms of neighbourhood effects on adolescents



The first branch concentrates on social interactions between people and the reciprocal influence that these interactions have, especially on children and adolescents. Jonathan Crane’s 1991 study of adolescent problem behaviour in U.S. ghettos is a prime example of this approach. He assumes that ‘social problems are contagious and are spread through peer influences’ (Crane 1991: 1227). This approach can be seen as an application of social learning theories supported by other research on peer influences, for example on delinquency (Haynie 2002; Haynie/Osgood 2005; Warr 2002). The integration of people with migrant backgrounds, especially recently immigrated people, into the host society is often assessed to be dependent on the frequency and intensity of contact with members of the host society, if only to learn the new language properly. Living in highly segregated ethnic neighbourhoods where one can manage daily life without contact to the host society does not facilitate this integration process. The social learning approach can also be applied to other areas of behaviour, such as health. In addition to peer influences, William J. Wilson (1987) pointed to the lack of positive role models for adolescents in neighbourhoods where most adults are unemployed.

A second branch of hypotheses about the social mechanisms behind neighbourhood effects concentrates on the role of collective neighbourhood social capital for preventing or intervening in problem behaviour, especially crime. This approach evolved from the classic theory of social disorganization (Shaw/McKay 1969) and is based on the concept of 'collective efficacy' (Sampson et al. 1997, 1999). Social capital is also regarded as an important individual resource which opens up job opportunities and thus improves an individual's chances in the labour market. Disadvantaged neighbourhoods also face inadequate and/or deteriorating public services.

In addition, it is argued that social opportunities of residents of disadvantaged neighbourhoods are impaired by stigmatization processes (Wacquant 1996), and that disadvantaged neighbourhoods experience a spiral of 'disorder and decline' fuelled by visible signs of disorder and low-level incivilities (Kelling/Coles 1996; Skogan 1990).

2.1 Methodological considerations

The recent increase of research on contextual effects has considerably advanced our empirical knowledge on the consequences of concentrated disadvantage, while simultaneously highlighting the methodological problems of pursuing such empirical research (Booth/Crouter 2001; Diez Roux 2004; Dietz 2002; Duncan/Raudenbush 2001). A contextual effect means, to take a single example, that a child from an immigrant family who lives in a neighbourhood with a high concentration of immigrants has worse prospects of integration and development than a similar child from a similar family who lives in a neighbourhood predominately inhabited by members of the majority ethnic group.

Empirical research on contextual effects is dependent on a certain degree of variation between individual and contextual levels of disadvantage, which is best achieved by sampling persons from a wide range of social conditions in an attempt to gauge the additional effect of the concentration of disadvantage on individual outcomes apart from the individual effects of disadvantage. Novel statistical approaches have been developed in order to test these assumptions, which simultaneously estimate individual- and aggregate-level effects in multiple regression models. These procedures are called multi-level modelling, hierarchical linear modelling or mixed modelling (Hox 2002; DiPetre/Forristal 1994; Raudenbush/Bryk 2002).

Despite the availability of data on a sufficient number of individuals and neighbourhoods for statistical analysis, it is difficult to draw conclusions about the existence of contextual effects. One major challenge is the self-selection bias or endogeneity problem. If certain individual characteristics are simultaneously the cause and effect of a person's residence in a disadvantaged area, and such endogeneity is not accounted for in the multivariate model, then the neighbourhood effect is likely to be overestimated. Duncan and Raudenbush (2001: 13) give the example of parents who are less caring about their children and therefore move to a 'bad' neighbourhood. Another example is that of immigrant parents who deliberately choose to live in an 'ethnic neighbourhood' in order to keep their ethnic and cultural identity and prevent their children's assimila-

tion into the host society. If parenting style is omitted from the explanatory model, the neighbourhood effect on adolescent integration or problem behaviour will be overestimated. Endogeneity problems are especially salient in the selection of adolescents into schools. Previous problem behaviour or poor academic achievement may be the cause for an adolescent to be admitted to a 'bad' school; it would therefore be a mistake to attribute the adolescent's subsequent behaviour to school influences alone. Hence, important factors which influence the choice of contexts should be included into explanatory models in order to avoid an over-estimation of contextual effects.

On the other hand, if factors (e.g. school performance) which in turn may have actually been influenced by previous exposure to the context ('bad' neighbourhood) are included in the model as control variables, an under-estimation of contextual effects may ensue. Recently, 'counterfactual models', a very elaborate method of using control variables, have been proposed to deal with this problem (Harding 2003).

Obviously, cross-sectional studies are particularly ill-equipped for avoiding these dangers. Longitudinal studies are much better suited for analyzing the development of attitudes or behaviour, in that such studies establish a baseline level at the beginning of the observational period from which to make inferences about causation. The results of the cross-sectional study reported in the latter part of this paper, too, cannot be interpreted as evidence for causation, but more modestly as evidence for potential neighbourhood effects.

A second challenge for research on neighbourhood effects is that residents of disadvantaged areas are not isolated from the outside world, but may have varying degrees of social contacts with people and institutions outside their neighbourhood (Friedrichs 1998). Although it is often assumed that the daily routines and social interactions of children and adolescents are more or less limited to their immediate environment, the empirical part of this paper shows that this is hardly the case. Peer groups and routine activities may or may not spread across neighbourhood boundaries, and the spatial orientation of adolescents is a matter of self-selection. The school environment, in particular, constitutes an overlapping but independent context for younger age groups. Unfortunately, the different strands of research on neighbourhoods and schools have largely been separate from one another. The question of how these contexts interact and affect each other has been largely ignored in recent research.

The temporal dimension poses another challenge to theoretical and empirical research on ecological contextual effects, as these effects vary in type and strength at different stages of individual development, particularly during childhood and adolescence. Wikström and Sampson (2003) make a useful distinction between long-term effects concerning the future propensity to break the law ('ecological context of development') and short-term effects concerning the opportunity structure of breaking the law ('ecological context of action'). The negative effects of poor schooling are mainly felt first after the end of the school career, at the beginning of the career path. Wheaton/Clarke (2003) found the long-term effects of neighbourhood disadvantage in early childhood to be stronger than short-term effects later in life. Longer-term influences that accumulate

over years, such as academic achievement or adoption of subcultural values, cannot adequately be captured in cross-sectional studies, particularly if individuals move from one neighbourhood to another and have accumulated a record of diverse neighbourhood conditions (Jackson/Mare 2006; Timberlake 2006).

Finally, even if evidence for the presence of contextual effects has been found, the puzzle has not yet been solved as to which social mechanisms mediate the structural effects of concentrated disadvantage on individual outcomes. This is either because survey data on 'soft' variables, such as neighbourhood social capital, are not available, or because aggregate-level variables are highly intercorrelated, which prevents such structural effects from being statistically isolated (Friedrichs et al. 2003; Oberwittler 2004a).

These theoretical and methodological considerations may be summed up in a tentative model of contextual effects on the psycho-social development of children and adolescents, which is heavily influenced by Bronfenbrenner's 1979 model: The child is placed in an environment consisting of micro-, meso- and macro-layers. In early childhood, the role of the family (micro-level) is paramount, and contextual effects are indirectly at work, via parenting and family climate. This changes as the child grows up and begins to directly interact with the environment. At the same time, the child's ecological context becomes more diverse depending on the spatial and social differences between his/her neighbourhood and school and the range of his/her spaces of individual action.

2.2 Recent empirical research

The development in recent social research on contextual effects on children and adolescents is impressive both in quantity and variety. However, the majority of studies are from the U.S., whereas research on European countries is much less frequent.

As previously mentioned, the issue of ethnic segregation is inextricably linked with the issue of poverty and social segregation both in the U.S and to a lesser extent in Western Europe. The majority of studies investigate the effects of social rather than ethnic segregation and do not always differentiate outcomes for native and immigrant populations. Educational and labour market success, health and crime are among the outcomes most studied. While U.S. studies have mainly reported significant contextual effects, European studies are much more inconclusive, with little or no empirical support for the existence of neighbourhood effects.

Health

Most health-related studies have focussed on adult populations. Recent examples of large-scale European studies on health are Lindström et al. (2004), who found no empirical support for neighbourhood effects on self-reported health in Malmö (Sweden), and Sundquist et al. (2006), who found an elevated risk of coronary heart disease in Stockholm neighbourhoods with high levels of unemployment and violent crime. Although both studies controlled for individual socio-demographic background, the question remains whether other, unmeasured individual characteristics could have been

responsible for neighbourhood differences. In the field of health behaviour, some U.S. studies analysed teenage pregnancies and found support for neighbourhood effects of concentrated disadvantage (Crane 1991; Harding 2003).

Education

In the United States, studies on educational success have produced robust evidence that neighbourhood disadvantage is partially responsible for higher high school dropout rates and lower academic achievement of African American students, thus confirming William Julius Wilson's 1987 claims (Ainsworth 2002; Crowder/South 2003; Harding 2003; Mayer 2002). In Germany, the availability of data on school achievement has been much improved by the recent PISA studies. A multilevel analysis of data from the second wave of PISA showed that, controlling for individual influences, students' maths scores declined with concentrated poverty, but were not affected by an increasing concentration of immigrants (Baumert et al. 2005). However, this study used regional context information, which is not a meaningful spatial level to identify contextual effects. A more appropriate research design was applied in a German study on secondary school selection in Mannheim, which found that the concentration of immigrants in school has a negative effect on academic achievement and, subsequently, the likelihood of transition to a higher-level secondary school (Kristen 2005, 2006).

Crime

In the field of deviance and crime, which is particularly well researched in the U.S., many studies have shown that adolescents living in particularly disadvantaged neighbourhoods are more likely to commit offences aside from individual risk factors. Analyses based on the longitudinal 'Add Health' data showed a higher risk of violent behaviour in census tracts of concentrated disadvantage (Bellair et al. 2003; Bellair/McNulty 2005). As part of the 'Project on Human Development in Chicago Neighborhoods', Sampson et al. (2005) estimated that 60% of the difference in rates of violence between White and Black adolescents is explained by neighbourhood disadvantage.

Some recent European studies have focussed on neighbourhood effects and juvenile crime using self-reports. Studies conducted in Rotterdam, the Netherlands (Rovers 1997), Peterborough in Great Britain (Wikström 2002) and Antwerp, Belgium (Pauwels 2006), did not find evidence of neighbourhood effects, whereas my own studies in two German cities (Oberwittler 2004) found strong evidence for such effects in certain subgroups of adolescents. A Dutch national-representative study reported a considerably increased risk of psychosocial problems, including aggression, among children in the most disadvantaged neighbourhoods (Reijneveld et al. 2005). Although social exclusion and neighbourhood disadvantage have received significant attention from German sociologists in the 1990s, no empirical study has attempted to disentangle individual effects of poverty from the contextual effects (Dangschat 1996, 1998; Häußermann 2000; Klocke/Hurrelmann 1998; Mansel/Brinkhoff 1998). Indeed, studies on delinquent behaviour among immigrant youths have largely ignored the segregation issue (Babka

von Gostomski 2003; Brüß 2004; Enzmann et al. 2004). In neighbouring France, where social problems stemming from ethnic segregation are more acute, researchers have conducted mostly qualitative studies (Body-Gendrot 2005; Dubet/Lapeyronnie 1992; Wacquant 1996). These studies have produced important and in-depth knowledge, but are weakened by a basic methodological problem. The studies assume that spatially concentrated disadvantage exacerbates social problems, without putting this assumption to an empirical test. This is largely due to the fact that data from disadvantaged areas cannot be compared with data from non-disadvantaged areas.

Although this is not a complete review of recent research, it is fair to conclude that European studies on neighbourhood effects on children and adolescents are both fewer in number and weaker in support for the ‘concentration hypothesis’ than are studies conducted in the U.S. While it may seem plausible to link these differences to the much higher scale of social exclusion and spatial segregation in the U.S. (taking into consideration that the European countries generally have better welfare provisions), it is much too early to draw conclusions. European research on neighbourhood effects has either not yet or just recently begun in many relevant social, psychological, or health areas, especially regarding the differentiation between social and ethnic segregation.

Recent research has become more sophisticated and has moved beyond the basic question whether contextual effects exist toward the question of which social mechanisms are responsible for translating collective social conditions into individual behaviour, and toward identifying moderating factors which explain why some people are susceptible to contextual influences while others are resilient (Luthar 2003; Massey 2001). In the case of children and adolescents, parents and parenting styles have – not surprisingly – been found to moderate neighbourhood influences (Beyers et al. 2003; Furstenberg et al. 1999; Ingoldsby et al. 2006; Rankin/Quane 2002). Other studies have supported the hypothesis that exposure to violence and the acceptance of deviant norms of behaviour mediate the effects of concentrated disadvantage on child and adolescent misbehaviour (Bingenheimer et al. 2005; Nofziger/Kurz 2005; Stewart et al. 2002).

Finally, a very important branch of research studies the relationship between the school and neighbourhood contexts. Until recently, most studies chose to deal either with school or with neighbourhood contexts, failing to address the fact that these contexts are different for many children and adolescents. A study in Great Britain separated these two contexts and found that school ethnic segregation is slightly more pronounced than residential ethnic segregation (Burgess et al. 2005; see also Croft 2003). Many U.S. studies, however, have tacitly assumed that school catchment areas mirror neighbourhood boundaries, or have used census tract data as a proxy for school environments. Conversely, a recent study in Iceland on juvenile delinquency used school-based survey data to make inferences on neighbourhood effects, claiming that almost all adolescents attend local schools (Thorlindsson/Bernburg 2004). This is not the case in most European countries and certainly not in Germany, as I will show in the latter part of this paper. Some studies have addressed the issue of how ethnic segregation in schools

relates to neighbourhood-level ethnic segregation, and also how the strategies of non-migrant parents to send their children to schools not frequented by immigrant children may exacerbate ethnic segregation in the less popular schools.

3. Results from a German multi-level study on contextual effects on adolescents

In the remaining part of this paper, I will report some results of an empirical study recently conducted in two German cities that investigated the question of contextual effects of concentrated disadvantage on adolescents' psychosocial adjustment, especially on delinquent behaviour. The intention of this study is to add to current knowledge about neighbourhood effects by focussing on the relative role of neighbourhood and school contexts, differences between genders and among ethnic groups, and the social mechanisms of contextual effects.

3.1 Data and methods

For the present study, two West German cities, Cologne and the greater Freiburg area (including some adjacent rural communities) were selected (see Oberwittler 2003a for details). With a population of one million, Cologne is Germany's fourth largest city, and has a Turkish community of 80,000. Cologne's economic and social structure is very diverse, and includes traditional manufacturing industries as well as electronic media firms and the country's second largest university. Freiburg, on the other hand, is a rather small city of 200,000 inhabitants with little industrial activity. Rather, the city is dominated by administration and the university.

The sample for Cologne was drawn up from a third of all census tracts for reasons of feasibility; the distribution of structural conditions of the sampled tracts almost completely matches the distribution for all Cologne tracts (Oberwittler 2003b: 16). For the purpose of multilevel analysis, census tracts were merged to a total of 61 generic 'neighbourhoods' with a similar socio-demographic composition and an average population of 11,200. Such aggregation enabled the appropriate number of respondents in each unit and reduced the unequal sizes of tracts.

Data from the statistical offices in both cities and in the appropriate rural districts were used to collect the socio-demographic information on neighbourhoods (for 1999 and 2000). The rate of welfare recipients under 18 years ('child welfare rate') serves as the key indicator of poverty, and the rate of non-German residents under 14 years serves as the indicator of ethnic segregation.

Data on perceptions, attitudes and self-reported delinquency of adolescents came from a self-administered classroom survey of about 6,400 8th through 10th grade students (13 to 16 years old), which was conducted in 1999 and 2000 (Oberwittler/Blank 2003). The response rate within schools was approximately 85%. At the end of the interviews, the students' addresses were geocoded by the interviewers to ensure to that exact informa-

tion on their places of residence was recorded. About 5,300 of the respondents lived within the defined survey neighbourhoods, whereas the rest were widely scattered across other areas and had to be omitted from neighbourhood-focussed (but not necessarily from school-focussed) analyses. Of the 5,300 respondents, approximately 4,850 resided in the 61 generic neighbourhoods used in the multilevel model. A combined factor score measuring the socio-economic status (SES) of respondents and a factor score based on official data on children and adolescents resulted in a correlation of $r=.96$ in Cologne and $r=.90$ in Freiburg.¹

Whereas the official definition of ethnicity and migration status is citizenship, and a large percentage of migrants in Germany in fact do not hold German citizenship (with the important exception of ethnic Germans from Eastern Europe and the former Soviet Union), the survey asked for the parents' countries of origin. If both parents were born abroad, the adolescent was defined as having an 'immigrant background'; if one or both parents were born in Germany, he or she was categorized as 'native'. Around 25% of respondents had a migration background. The parents' socio-economic status (SES) consisted of both the educational status (whether they had a university degree) and occupational status, based on ISCO'68 codes operationalised through Wegener's (1988) 'Magnitude Prestige Skala'.²

The key concepts for the analyses presented in this paper were measured by a number of survey questions. The first key concept, 'relative deprivation', is a scale consisting of four items such as: "Often I have to do without something because my parents cannot afford it" (Cronbach's alpha .72). 'External locus of control' is a four item-scale (Cronbach's alpha .54) that reflects a fatalistic view of the respondent's future, and includes such items as: "It's not worth striving for a goal because I will probably not achieve it anyway". 'Alienation by the police' is a single item answering the question: "Do you feel like you are being treated fairly, not better or worse than any other youth, by the police?" The delinquency scale consists of 14 items describing punishable offences and truancy (Oberwittler et al. 2002). These items cover common types of juvenile offences including shop lifting, graffiti, drug use, motor bike theft, assault and burglary. The respondents were asked whether or not, and if so, how often they had committed each offence during the last twelve months. The open frequencies of self-reported offences were recoded to five ordinal categories from 0 (no offence) to 4 (10 or more offences). Total and offence-specific subscales for violence, serious property offences etc. were constructed by computing unweighted means of the recoded items. The resulting indices reflect both the frequency and range of offences, which are known to be highly correlated. Whereas 55% of respondents reported at least one offence during the last year,

¹ Survey factor score: % immigrant background, % unemployed or welfare recipient >5 months; mean parents' highest occupational prestige, % university degree of parents, mean household goods; official factor score: % non-German <14 yrs, % welfare recipients < 18 yrs, mean dwelling floor space per person.

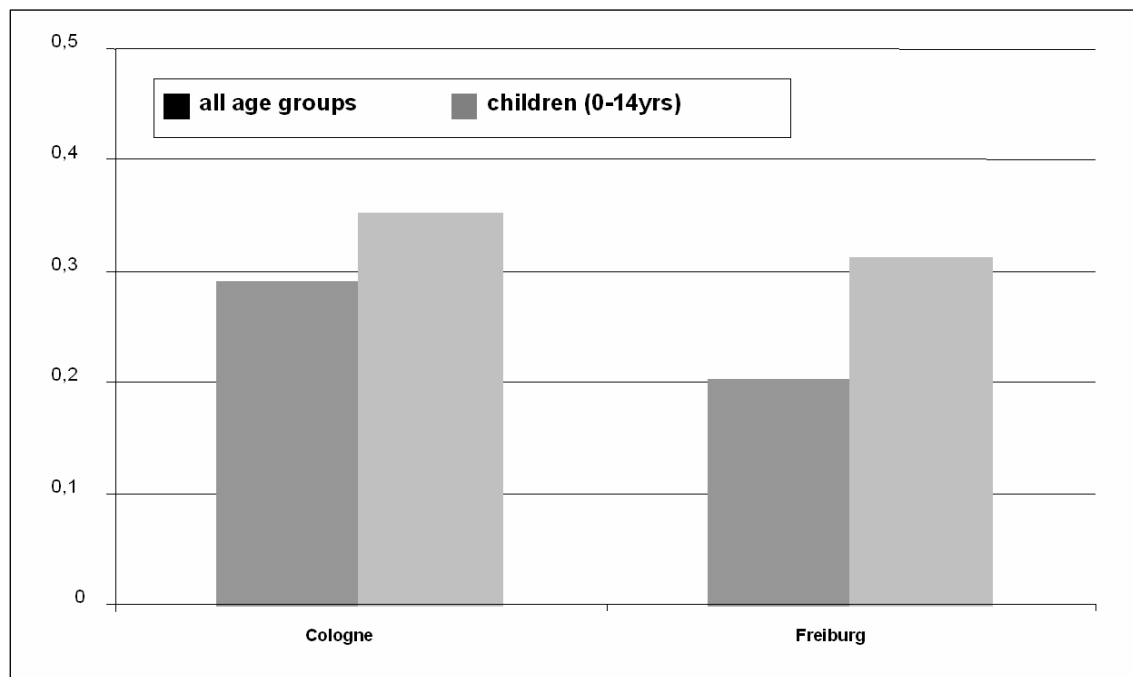
² In approximately a third of cases, no sufficient information was available for assigning an ISCO code; however, a rough categorization to a four-point ordinal scale yielded valid information for 95% of the sample, using the highest status of either father or mother (Oberwittler/ Blank 2003 for details).

28% reported a violent or serious property offence. In addition, the survey included questions on the delinquency of friends and whether respondents belonged to a group of friends that often fights or behaves aggressively ('delinquent youth gang'). The term 'gang' is used cautiously because these groups should not be likened with U.S.-style criminal gangs (Esbensen/Weerman 2005). As part of this study, the validity of the self-reports was scrutinised by comparing them to official police registrations (Köllisch/Oberwittler 2004) and by conducting a secondary analysis comparing five recent German self-report studies (Naplava 2003). Based on these analyses, the self-reports were fairly accurate although there were some signs of underreporting by respondents with migration background, which could result in an underestimation of problem behaviour among these groups of adolescents.

3.2 The extent of urban poverty and segregation

Ethnic segregation is generally more pronounced for children and adolescents than for the total population as can be seen by the dissimilarity index³ of Graph 2. Ethnic segregation is also more pronounced in Cologne than in Freiburg.

Graph 2: Index of dissimilarity for immigrant vs. native residents in Cologne and Freiburg, 2000; total population and children compared



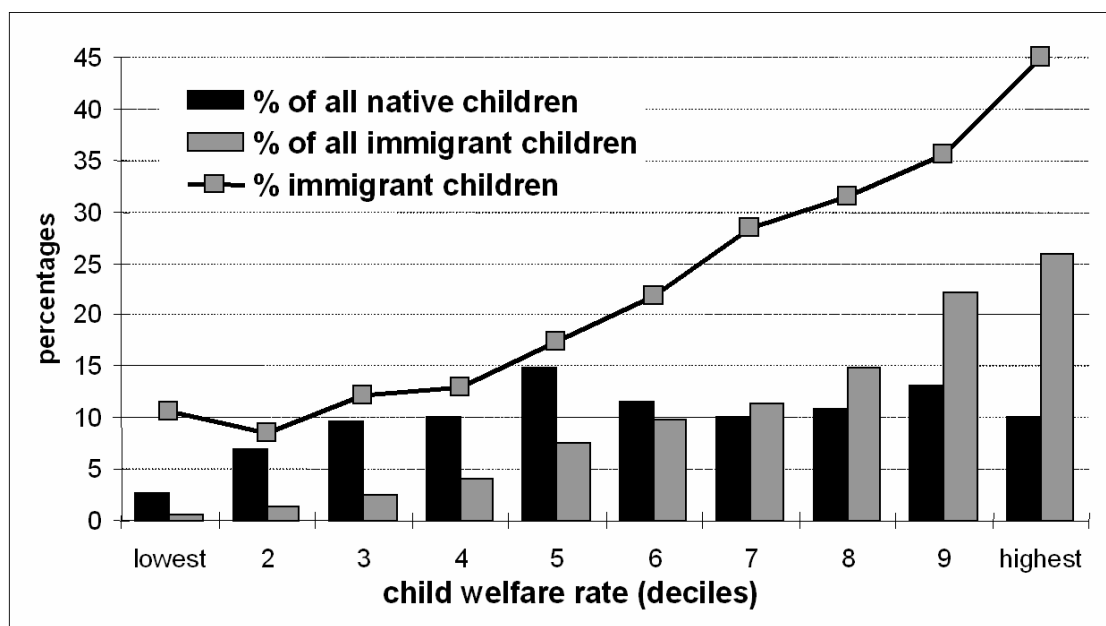
Source: Statistical offices of Cologne and Freiburg. Own computations, N=295 (Cologne) and N=41 (Freiburg) neighbourhoods with > 200 residents.

There is a lack of reliable data on poverty in Germany, especially for small area analyses. What is known, though, is that at the time of this study, 14% of children and ado-

³ The dissimilarity index is a measure of the unevenness of the spatial distribution of two population groups within geographic or organisational units (Blasius 2002; Gorard/Taylor 2002).

lescents in Cologne were welfare recipients and many families received some sort of unemployment benefits. 9.5% of the total population in Cologne and nearly 14% of children under 14 lived in census tracts with a high concentration of poverty, defined by a child welfare rate of 25% or more. In Freiburg, only one of 40 neighbourhoods met this definition, yet it was home to 7% of the child population. The city-wide child welfare rate was 10.5% in 1999. Graph 3 illustrates the close link between social and ethnic segregation in Cologne. Native German children live relatively evenly distributed across both affluent and poorer neighbourhoods, and roughly a third of them live in the poorest third of neighbourhoods. In contrast, almost 60% of children with an immigrant background are concentrated in the poorest areas of Cologne, and only 5% of them live in the most affluent third of neighbourhoods. As a result, the proportion of immigrant children rises from under 10% in the richest to 45% in the poorest decile of neighbourhoods. When the recently immigrated ethnic German families from the Soviet Union are added into this figure, the share of children with immigrant background surpasses 50%.

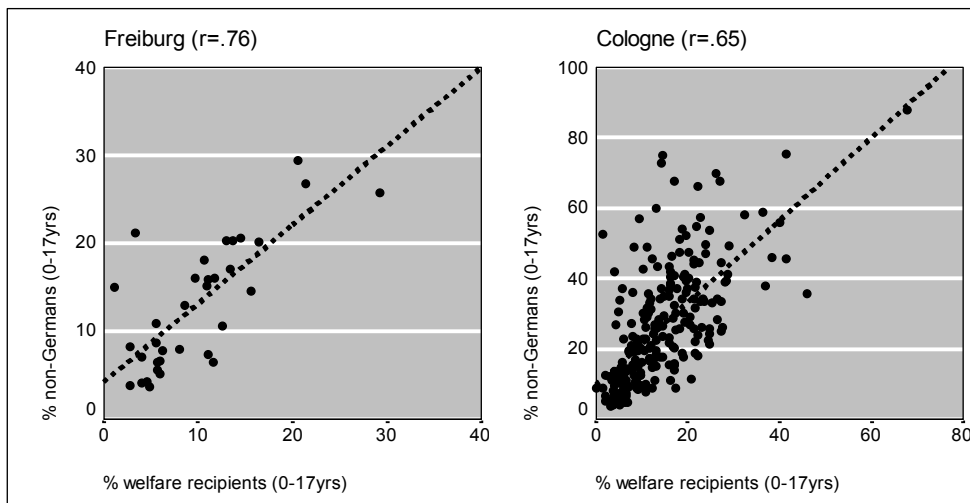
Graph 3: Distribution of native and immigrant children (0-14 years) by neighbourhood child welfare rates, Cologne, 2000



Source: Statistical office of Cologne. Own computations, N=295 neighbourhoods with > 200 residents.

The correlation between ethnic and social segregation is visible in a scatterplot of poverty concentration by immigrant concentration for both cities (Graph 4). The correlation is even higher in Freiburg, whereas in Cologne there are neighbourhoods with high percentages of immigrants (approx. 40 to 70%), but relatively low rates of poverty (approx. 10 to 20%), underlining the fact that many immigrant families live outside the worst poverty areas.

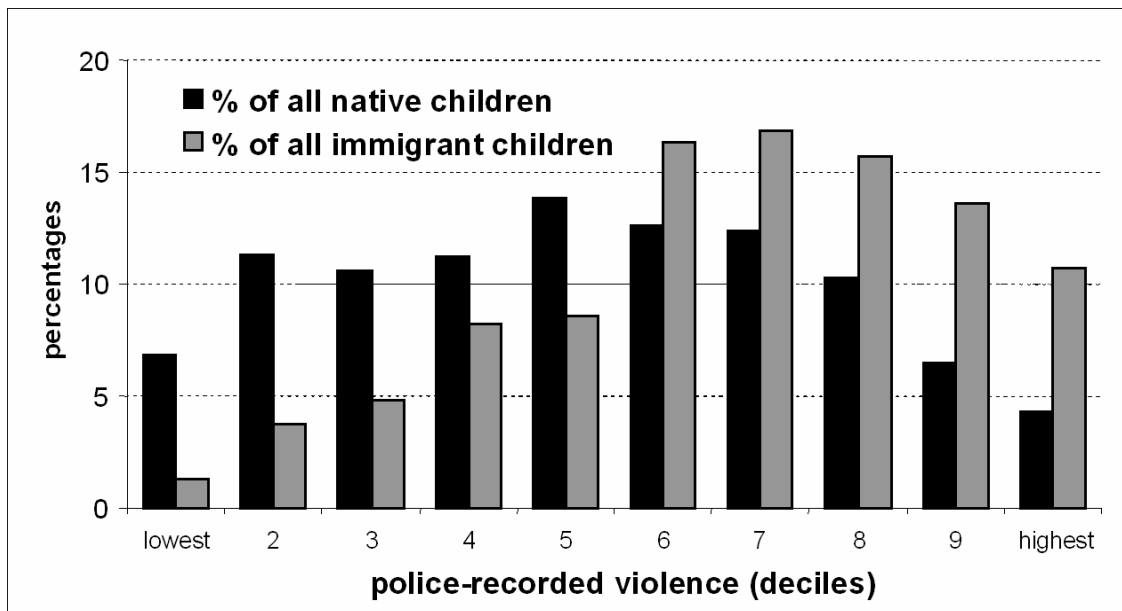
Graph 4: Neighbourhood level concentrations of welfare recipients and immigrants under 18 years, Cologne and Freiburg, 2000



Source: Statistical offices of Cologne and Freiburg. Own computations, N=295 (Cologne) and N=41 (Freiburg) neighbourhoods with > 200 residents.

Recent research has highlighted the role of street violence as one dimension of neighbourhood disadvantage that endangers positive child and adolescent development (Bingenheimer et al. 2005). Based on police data on the spatial distribution of violence, Graph 5 shows that a much higher proportion of immigrant children as compared to native German children live in violent neighbourhoods of Cologne and are thus potentially more exposed.

Graph 5: Distribution of native and immigrant children (0-14 years) on neighbourhoods by police-recorded violence rates, Cologne, 2000



Source: Statistical office of Cologne. Own computations, N=295 neighbourhoods with > 200 residents.

3.3 Little evidence for increased psychological strain in disadvantaged neighbourhoods

One of the key tasks for quantitative research on segregation is to disentangle the effects of neighbourhood disadvantage from the effects of individual disadvantage. Most recent studies have treated disadvantage as poverty combined with migration status. In the following analyses of the survey data, I will look into both dimensions.

I first present a number of line plots that are intended to explore possible neighbourhood effects on attitudes and perceptions of adolescents often linked to concentrated poverty. Theory and common sense suggest that adolescents living in concentrated poverty will experience more strain, feel more deprived, less optimistic and more alienated than other adolescents. In the following graphs, the survey respondents are divided into five groups of approximately 1,300 according to the neighbourhood child welfare rate (see Table 1). The lowest and the highest of these quintiles are smaller (approx. 650 respondents), representing the extreme ends of the neighbourhood distribution with welfare rates of less than 3% and more than 24.5% respectively in order to boost possible non-linear effects.

Table 1: Survey sample by quintiles of neighbourhood welfare rates

		welfare rate (under 18yrs), quintiles with extreme groups					Total
		lowest (<3%)	2	3	4	highest (>24.5%)	
background	immigrant	50	115	341	527	320	1353
	native	593	1233	1016	797	325	3964
Total		643	1348	1357	1324	645	5317

Source: MPI Youth Survey 1999/2000, Cologne and Freiburg.

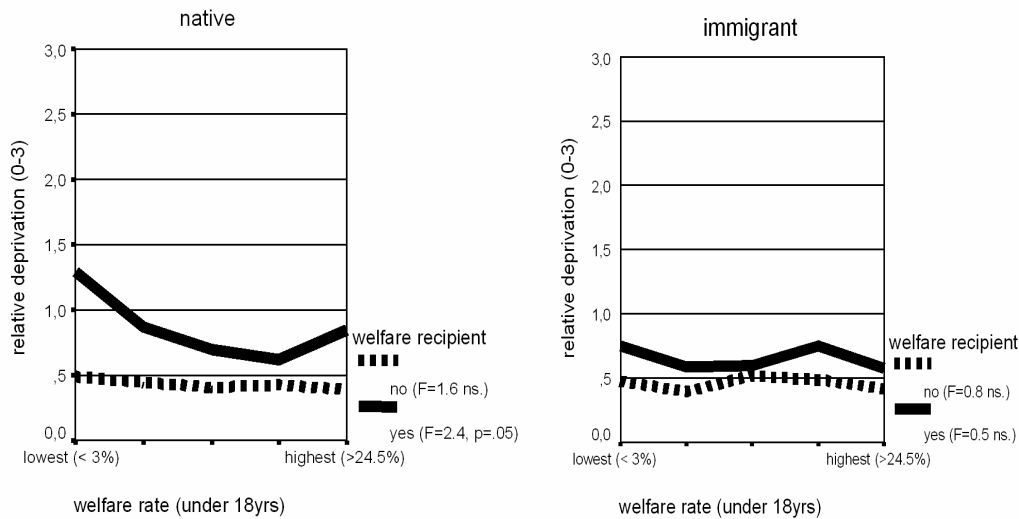
The line plots compare respondents whose families, for a period of at least six months, had or had not been affected by unemployment or welfare dependency.⁴ In addition, the sample is split into native and immigrant respondents. Because few adolescents of immigrant background live in affluent neighbourhoods, the sample size is very small for this particular subgroup, which makes it difficult to achieve statistical significance. However, native and immigrant respondents are equally represented in the highest quintile of neighbourhoods (approx. 320 each).

Graphs 6a and b show the levels of relative deprivation reported by the respondents. As expected, adolescents individually affected by poverty score higher on this scale than others, yet the differences are not pronounced. Immigrant respondents do not report higher relative deprivation than native respondents. In fact, the only marked and significant neighbourhood effect is for native welfare recipients living in affluent neighbour-

⁴ This survey questions suffers from a relatively high item nonresponse (3.4%) which implies that some respondents decided not to report their parents' unemployment or welfare dependency due to social desirability concerns. It seems possible that these respondents also underreported on related scales like relative deprivation, thus causing a systematic bias to wrongly accept the null hypothesis.

hoods (on the left-hand side of the x-scale). This result is in line with the concept of relative deprivation, as it implies that the psychological strain of being poor is more intense in an environment where most others are affluent.

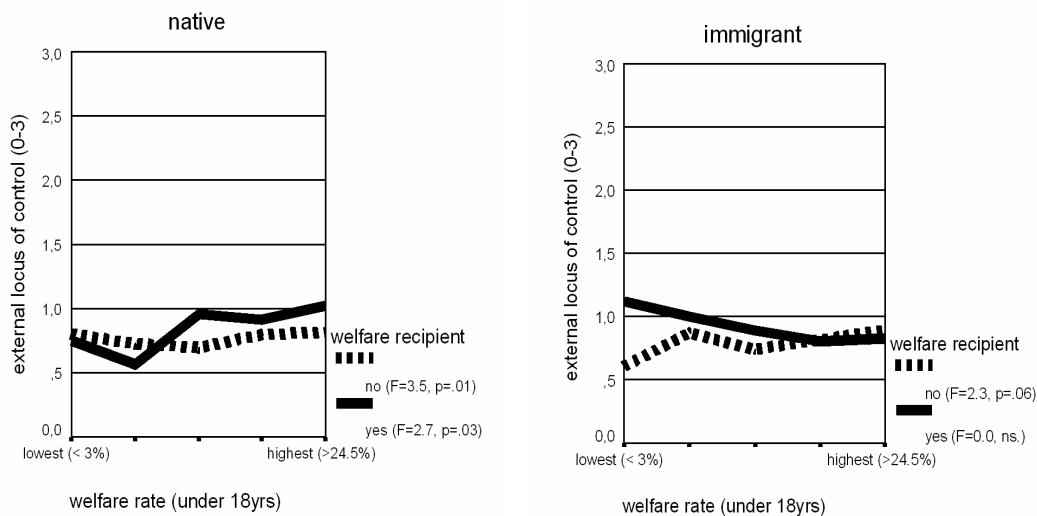
Graph 6a-6b: Relative deprivation as psychological strain of adolescents affected by individual and neighbourhood poverty by immigrant background



Source: MPI Youth Survey 1999/2000, Cologne and Freiburg, N=5317.

Another adverse effect ascribed to concentrated poverty is a fatalistic or bleak view of the future, measured by the scale 'external locus of control'. The results reported in Graphs 6c and d are even less pronounced than the previous ones. For native adolescents, there is a very slight increase with neighbourhood poverty for those individually affected by poverty but not for the others.

Graph 6c-6d: External locus of control as psychological strain of adolescents affected by individual and neighbourhood poverty by immigrant background

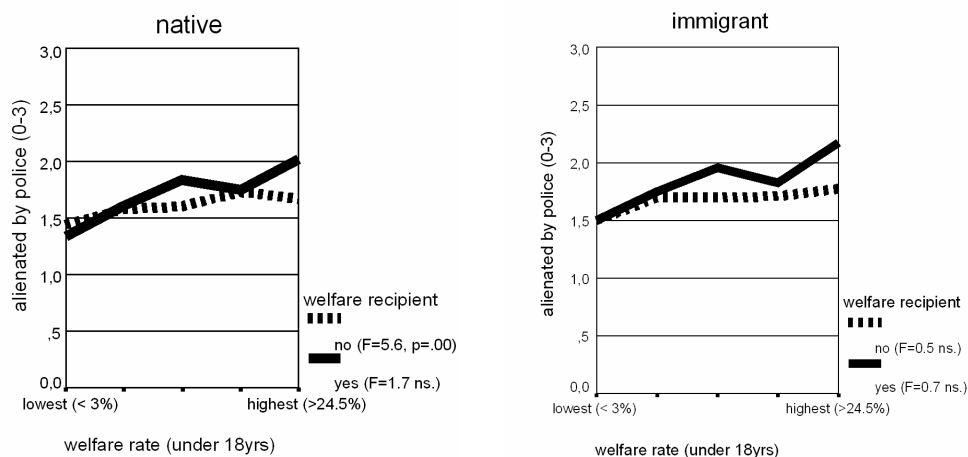


Source: MPI Youth Survey 1999/2000, Cologne and Freiburg, N=5317.

For immigrant adolescents, the effect is the opposite: Respondents not affected by poverty score slightly higher in areas of concentrated poverty, and those affected by individual poverty show the reverse trend. However, the latter effect is non-significant and should be treated even more cautiously than the others.

Results are more clear-cut for the question of whether adolescents feel alienated by the police. Tensions between immigrant adolescents and the police and violent anti-police riots are a recurrent problem in many European countries and have wide and serious repercussions for integration policies. The main and surprising message of the Graphs 6e and f is that there is absolutely no difference in alienation between native and immigrant adolescents. Further support for this finding is the absence of rioting by immigrant youths in Germany. For both native and immigrant respondents, there is a combined effect of individual-level and neighbourhood-level poverty to increase feelings of alienation.

Graph 6e-6f: Alienated by the police as psychological strain of adolescents affected by individual and neighbourhood poverty by immigrant background



Source: MPI Youth Survey 1999/2000, Cologne and Freiburg, N=5317.

I also used 'concentration of immigrants' (measured by the percentage of non-German residents under 14 years) instead of concentration of welfare recipients as a grouping variable for the same series of analogous line plots. The results can be reported summarily in Table 2 without printing the graphs. Table 2 shows that the effects of ethnic segregation are in almost no respect more pronounced than the effects of social segregation. For example, the F-values of the differences by area poverty in relative deprivation of immigrant respondents reported in Graph 6b were 0.5 (welfare recipients) and 0.8 (non-recipients), whereas the respective F-values of the differences by area immigrant concentration are 0.6 and 1.0 (both non-significant). A tentative conclusion from this comparison is that ethnic segregation does not have a tremendously stronger effect on adolescents than does social segregation, especially on adolescents from ethnic minorities. Social segregation also did not show a strong contextual effect.

Table 2: Psychological strain by levels of neighbourhood concentration of immigrant residents, under 14 years (F-value for significant mean differences)

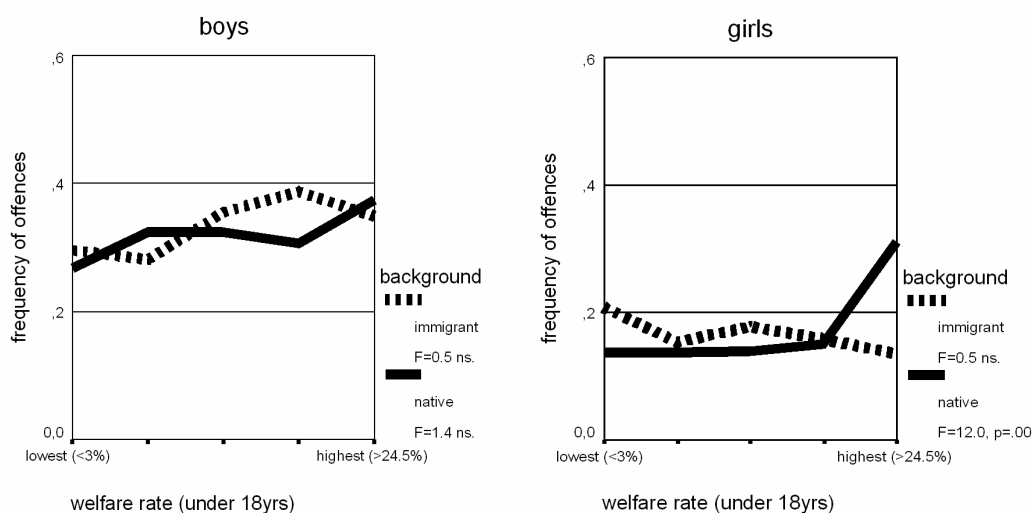
		native	immigrant
relative deprivation	no welfare recipient	3.5, p=.01	0.6 ns.
	welfare recipient	1.7 ns.	1.0 ns.
external locus of control	no welfare recipient	2.2, p=.07	1.9 ns.
	welfare recipient	1.5 ns.	0.6 ns.
alienated by the police	no welfare recipient	5.3, p<.01	1.2 ns.
	welfare recipient	0.5 ns.	0.5 ns.

Source: MPI Youth Survey 1999/2000, Cologne and Freiburg, N=5317.

3.4 Noticeable neighbourhood effects on delinquency restricted to native adolescents

Delinquency and crime are frequently analysed topics concerning adolescent adjustment to social disadvantage and are also the main concerns of the present study. Does the concentration of poverty cause adolescents to become more delinquent? Graphs 7 allow a preliminary look at the data. These graphs are organised in a similar way to the previous set, but are this time split by gender, with the lines representing immigration status. The frequency of overall offences by boys increases slightly (but not significantly) with neighbourhood disadvantage for both native and immigrant respondents (Graphs 7a-7b). While girls with immigrant background show a slight *decrease* of delinquency with neighbourhood poverty, native girls who live in the poorest neighbourhoods report much more delinquency than others. The latter effect is a highly significant and non-linear. We will come back to these gender differences later.

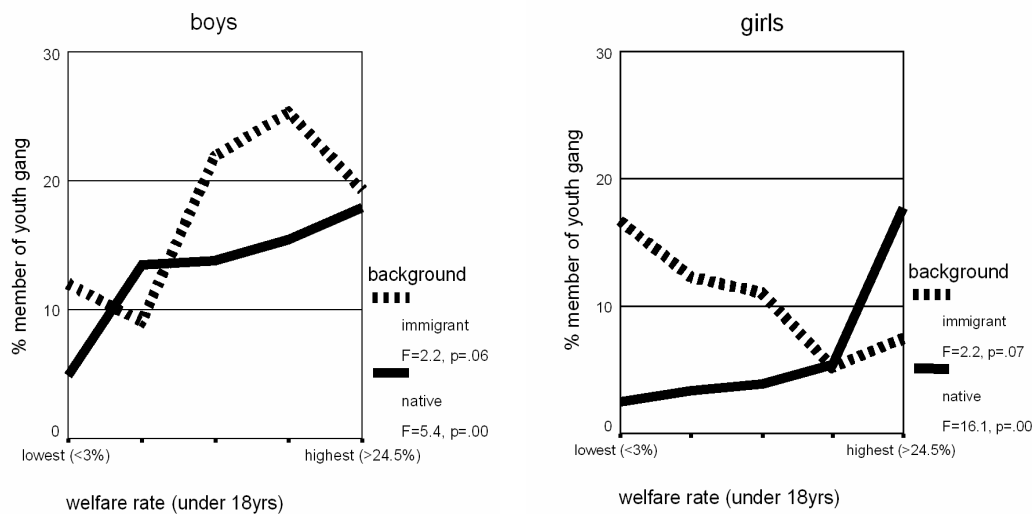
Graph 7a-7b: Self-reported delinquency by neighbourhood poverty, sex and immigration status



Source: MPI Youth Survey 1999/2000, Cologne and Freiburg, N=5317.

Similar but more pronounced results can be seen in Graphs 7c-7d for the percentage of respondents who are members of a delinquent ‘youth gang’ (overall prevalence is 10%). The share of ‘gang members’ increases with neighbourhood poverty for native as well as for immigrant adolescents, although this increase is steadier and more pronounced for the native subgroup. For native girls, the proportion increases dramatically in the most deprived neighbourhoods, while immigrant girls show a reverse tendency, declining with neighbourhood poverty.

Graph 7c-7d: Membership in delinquent youth gang by neighbourhood poverty, sex and immigration status



Source: MPI Youth Survey 1999/2000, Cologne and Freiburg, N=5317.

In general, delinquency of adolescents with immigrant backgrounds is less strongly associated with neighbourhood poverty levels than is the delinquency of native adolescents. For immigrant girls, the effects are contrary to expectation – their delinquency tends to be lower in the more disadvantaged neighbourhoods. Clearly, these preliminary findings need further and more elaborate analysis.

As in the previous section, I repeated these group comparisons for ethnic instead of social segregation, grouping neighbourhoods by the share of immigrant residents. The statistical results are reported in Table 3 and can be compared with the F-values given in Graphs 7. Again, no substantial difference between social and ethnic segregation exists. Some of the differences are slightly less pronounced for native adolescents, and some are marginally more significant for immigrant adolescents.

Table 3: Self-reported delinquency by levels of neighbourhood concentration of immigrant residents, under 14 years (F-value for mean differences)

		native	immigrant
self-reported delinquency	boys	1.5 ns.	3.0, p=.02
	girls	3.2, p=.01	1.6 ns.
membership in delinquent youth gang	boys	3.2, p=.01	1.5 ns.
	girls	9.0, p<.01	2.5, p=.01

Source: MPI Youth Survey 1999/2000, Cologne and Freiburg, N=5317.

As a fairly recent statistical innovation, multilevel analysis, or hierarchical linear modelling, allows for the integration of individual- and context-level perspectives on social phenomena by simultaneously estimating multiple regression equations on both levels without violating important assumptions of conventional regression analysis (DiPrete/Forristal 1994; Snijders/Bosker 1999). Thus it becomes possible to estimate the contextual effects of neighbourhoods on adolescents' behaviour aside from individual influences, which may also vary between contexts. In multilevel modelling, the first step of analysis is usually to compute the so-called 'empty model' with no explanatory variables in order to examine whether a significant proportion of variance is attributable to the context level, comparable to a conventional ANOVA. The intraclass correlation coefficient (ICC) computed from the variance components shows the possible contextual effect as a percentage of total variance. If an ICC is not significant, contextual effects are unlikely to exist.

Applying this technique to the delinquency scales in the present survey sample confirms some of the previous findings (Table 4). Native adolescents generally have much higher ICCs than immigrant adolescents, indicating a higher potential for neighbourhood effects as compared to adolescents with migration background. The only significant – but very modest – ICC of immigrant adolescents is for serious property offences by girls (1.5%). Consequently, it does not make sense to build more complex multilevel models for the group of immigrant respondents, as the results do not suggest significant neighbourhood effects on delinquency (see below for further discussion of immigrant girls).

For German respondents, potential neighbourhood effects seem only to exist for those with local friendship circles. One of the most remarkable results of the present study is that the spatial orientation of peer contacts determines the existence of neighbourhood effects on delinquency (see Oberwittler 2004b for a more extensive analysis). In Table 4, the sample is split according to the locality of friendship circles, which turns out to have a dramatic effect on ICCs: For those of the native respondents who say that none or few of their friends live in their own neighbourhood, the share of neighbourhood-level variance is negligible, whereas for those who say that many or all friends live in their own neighbourhood, the ICC is around 8% for both violent and serious property offences.

Table 4: Share of neighbourhood-level variance (intraclass correlation coefficients, ICC) of serious delinquency by immigration status, sex, and location of friends

	offence type	
	violent	serious property
<i>native adolescents</i>		
boys	1.2*	5.0*
girls	6.2*	4.6*
friends from own neighbourhood ^a	8.1*	7.9*
friends from different neighbourhood ^b	0.0	1.1*
<i>immigrant adolescents</i>		
boys	0.8	0.6
girls	0.3	1.5*
friends from own neighbourhood ^a	0.9	1.8
friends from different neighbourhood ^b	2.3	2.6

*Empty models' computed in HLM 6. Significance level: * p<0.05.*

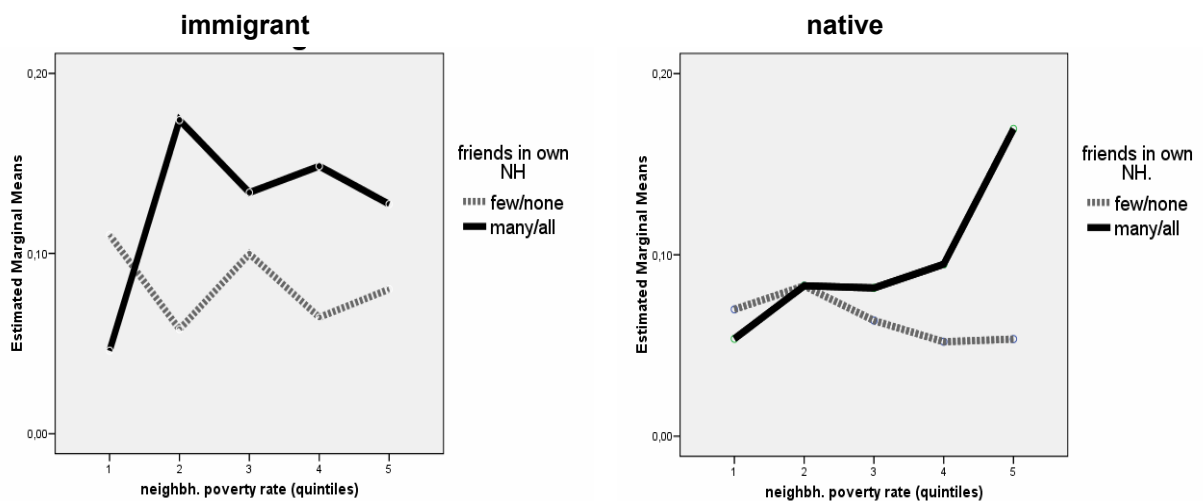
^a „all“ or „many“ of friends live in respondent's neighbourhood (54,0% of sample)

^b „few“ or „none“ of friends live in respondent's neighbourhood (46,0% of sample)

Source: MPI Youth Survey 1999/2000, Cologne and Freiburg, N=5317 in N=61 neighbourhoods.

This points to the conclusion that if friends come from the same neighbourhood, the neighbourhood context is important for native adolescents, if not, the neighbourhood context is not important. This dramatic difference in ICCs lends strong support to differential association and learning theories that stress the role of delinquent peers for the transmission of delinquent behaviour (Akers/Jensen 2003). This finding also calls into question the notion that adolescents living in poverty areas are trapped in a ghetto-like situation; instead, these results show the importance of choice and agency in the causation of contextual effects (cf. Arum 2005).

Graph 8: Serious offending by neighbourhood poverty, immigration status and locality of friendship circles (predicted from ANCOVA with individual-level controls)

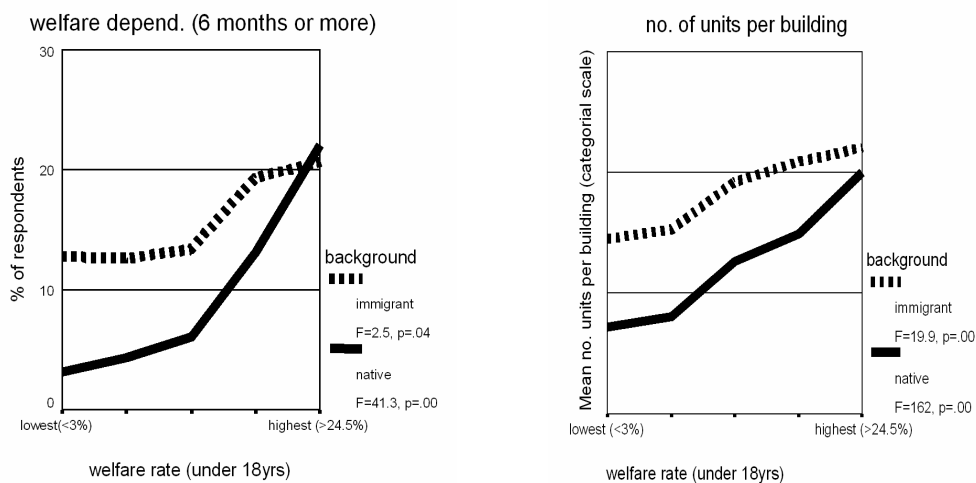


Source: MPI Youth Survey 1999/2000, Cologne and Freiburg, N=4819.

The same finding is illustrated in Graph 8, which reports the estimated levels of serious offences for native and immigrant youths by spatial orientation of friendship circles and neighbourhood poverty, controlling for individual socio-demographic background. The only subgroup that seems to be strongly affected by neighbourhood poverty is the group of native youths with local friendship circles.

How can these unexpected results regarding immigrant youths be explained? Scholarly opinion has, from the early days of the Chicago School, assumed that higher crime involvement of adolescents from ethnic minority or immigrant groups can partly be explained by the additional disadvantage of living in the most disadvantaged neighbourhoods (Krivo/Peterson 2000; Sampson/Wilson 1995; Shaw/McKay 1969). Most recently, the longitudinal Project on Human Development in Chicago Neighborhoods (PHDCN) has empirically confirmed this hypothesis by estimating that the gap in violence between white and black adolescents is reduced by 60% when neighbourhood contexts are taken into account (Sampson et al. 2005). The present case study, however, implies that immigrant adolescents outside poverty areas are nearly as delinquent as or (in the case of girls) even more delinquent than their peers in poverty areas. I can only offer some tentative and exploratory observations from the survey data that may help to explain this finding. Even if immigrant adolescents live in more affluent neighbourhoods, they do not seem to ‘profit’ from the advantage connected with their place of residence to the same extent as native adolescents seem to. Their families’ individual socio-economic situation remains precarious even if they live in a more affluent neighbourhood, as can be seen from the relatively high proportion (13%) of immigrant respondents living in welfare-dependent households (including unemployment benefit) (Graph 9a), whereas this rate is only 3% for native respondents in the most affluent neighbourhoods.

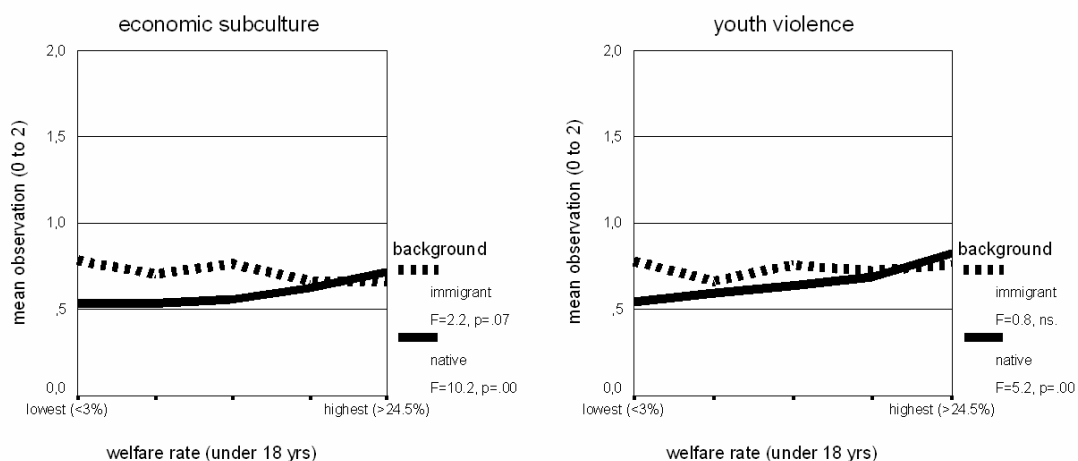
Graph 9a-b: Individual social conditions by neighbourhood poverty and immigration status



Source: MPI Youth Survey 1999/2000, Cologne and Freiburg, N=5317.

As can be seen in Graph 9b, immigrant youths more often live in multiple apartment buildings than do native youths, rendering the difference between neighbourhoods less pronounced than for the native adolescents. Differences in social status and living conditions between native and immigrant adolescents are actually much more pronounced outside of poverty areas, possibly making integration in these areas even more challenging. Contrary to expectations, immigrant adolescents did not vary across levels of neighbourhood poverty when asked about their perceptions of social problems like vandalism, violent street crime and economic subculture (drug trading, black market) in their neighbourhood, whereas native adolescents report significantly less violence and signs of economic subculture in affluent neighbourhoods (Graph 10a-10b). This implies that although natives and immigrants live in the same neighbourhoods, their social experiences and ‘life worlds’ remain partially separated. However, the present data does not provide reliable answers to these questions. More research is needed on social living conditions and on the behaviour of immigrant youths, particularly those living outside of poverty areas.

Graph 10a-10b: Observations of neighbourhood social problems by neighbourhood poverty and migration status



Source: MPI Youth Survey 1999/2000, Cologne and Freiburg, N=5317.

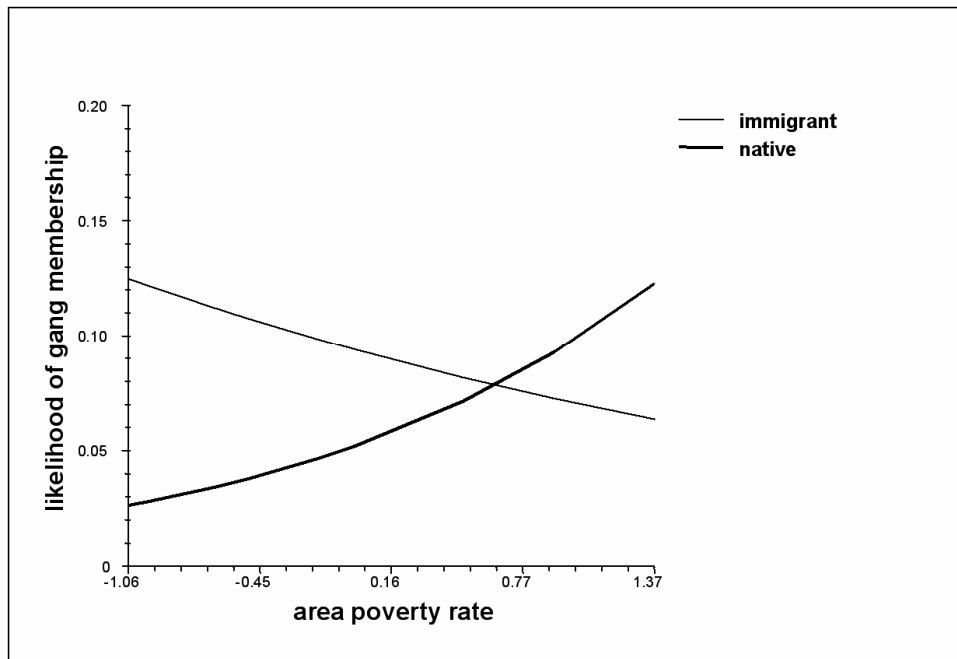
Why are immigrant girls in ‘better’ neighbourhoods more delinquent?

One of the puzzling results of the MPI Youth Survey is that while native girls seem to be more violent in the most disadvantaged neighbourhoods, girls from immigrant families show the reverse pattern, with decreasing levels of violence in more disadvantaged neighbourhoods. This interaction effect between the ethnicity and neighbourhood contexts exists only for girls, which raises the question of why immigrant girls should behave in this counter-intuitive fashion. I can only offer tentative explanations for this phenomenon, which deserves further attention.

The cross-level interaction effect between ethnicity and neighbourhood contexts is confirmed in a logistic multilevel model with ‘gang membership’ as the dependent

variable. Graph 11 plots the predicted likelihoods of being a gang member for native and immigrant girls. The cross-level interaction term is highly significant (model not shown).

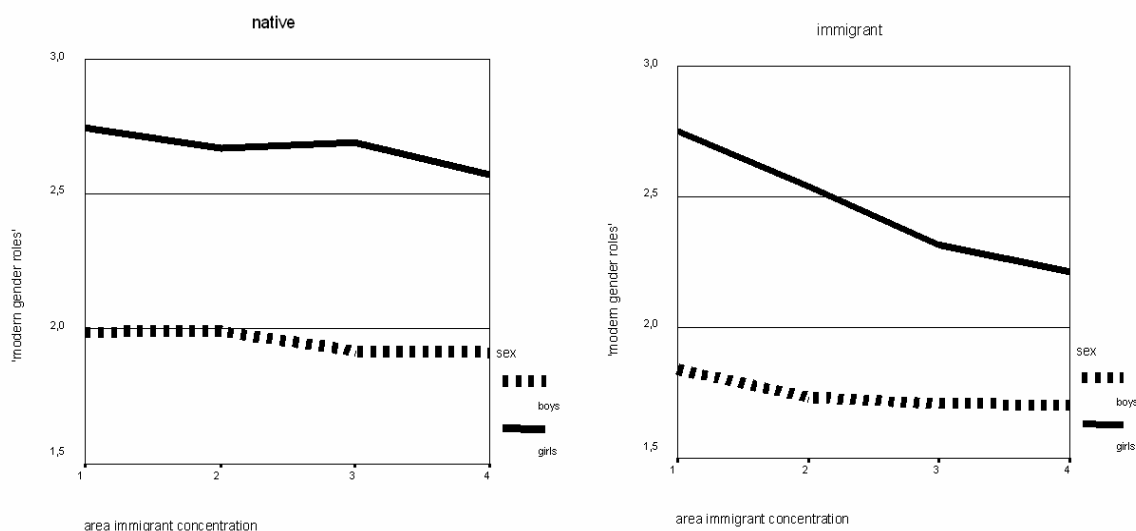
Graph 11: Predicted likelihoods of gang membership for native and immigrant girls, logistic multilevel regression



Source: MPI Youth Survey 1999/2000, Cologne and Freiburg,
N=2466 girls in N=61 neighbourhoods

The most likely explanation is that immigrant girls living in neighbourhoods with a high concentration of immigrants are subjected to stronger informal social control and, as a result, their behaviour is more in line with traditional gender roles. Public deviant and daring behaviour of girls is generally not appreciated by parents from Islamic cultures, for example, who may want to preserve traditional family values. By extension, girls living outside these areas of concentrated disadvantage are to some extent 'freed' from these constraints and use this freedom to participate in delinquent behaviour. These girls may be 'infected' with modern values through peer contact. One empirical result which supports this hypothesis is displayed in Graph 12. Attitudes toward modern gender roles change greatly according to neighbourhood context for immigrant girls. In neighbourhoods with low immigrant concentration, girls have modern views on gender roles like their native peers, whereas in neighbourhoods with high immigrant concentration, their attitudes are much more conservative.

Graph 12: Approval of modern gender roles by ethnicity, sex and area concentration of immigrants



Source: MPI-Youth Survey 1999/2000, Cologne, N=1502.

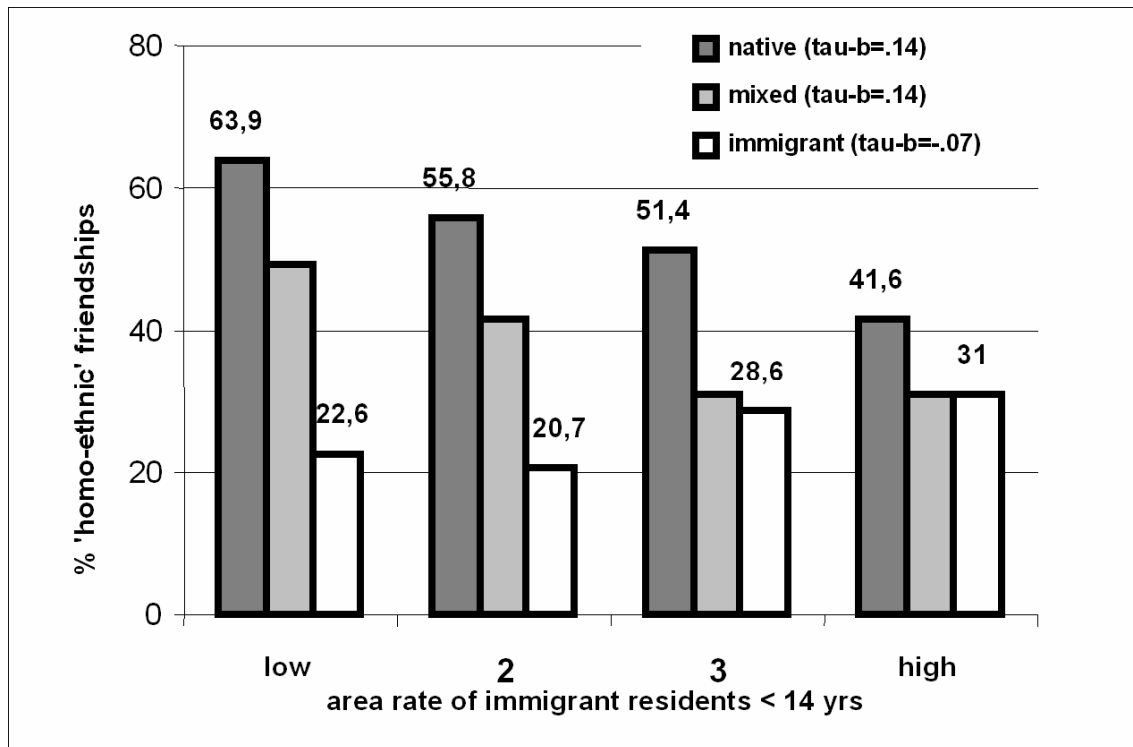
These findings do not, however, explain why the level of violence among immigrant girls exceeds that of native girls in the same neighbourhoods. The questions of whether immigrant parents with traditional family values are more likely to reside in segregated neighbourhoods (which would be a selection effect) and whether their efforts to maintain control over their daughters are more effective in these neighbourhoods (which could be a contextual effect) remain open.

3.5 Inter-ethnic friendships are dependent on ethnic mix of neighbourhood and school contexts

Inter-ethnic friendships are one indicator of the level of integration of immigrant adolescents into German society. A large school survey by Dollase et al. (2002) showed that among native German adolescents, the prevalence of prejudices against immigrants declines as the percentage of immigrant classmates rises, which confirms the contact hypothesis.

The MPI school survey did not focus on inter-ethnic relationships and attitudes; however, it is possible to answer the basic question whether German respondents have 'best friends' from other ethnic groups and vice versa. Based on this question, the following graphs show the effect of varying levels of concentration of immigrant youths, both for neighbourhood and school contexts.

Graph 13a: Ethnic friendship patterns by neighbourhood context: Percentage of respondents whose close friends are all native (for native and mixed backgrounds) or all immigrants (for immigrant backgrounds)

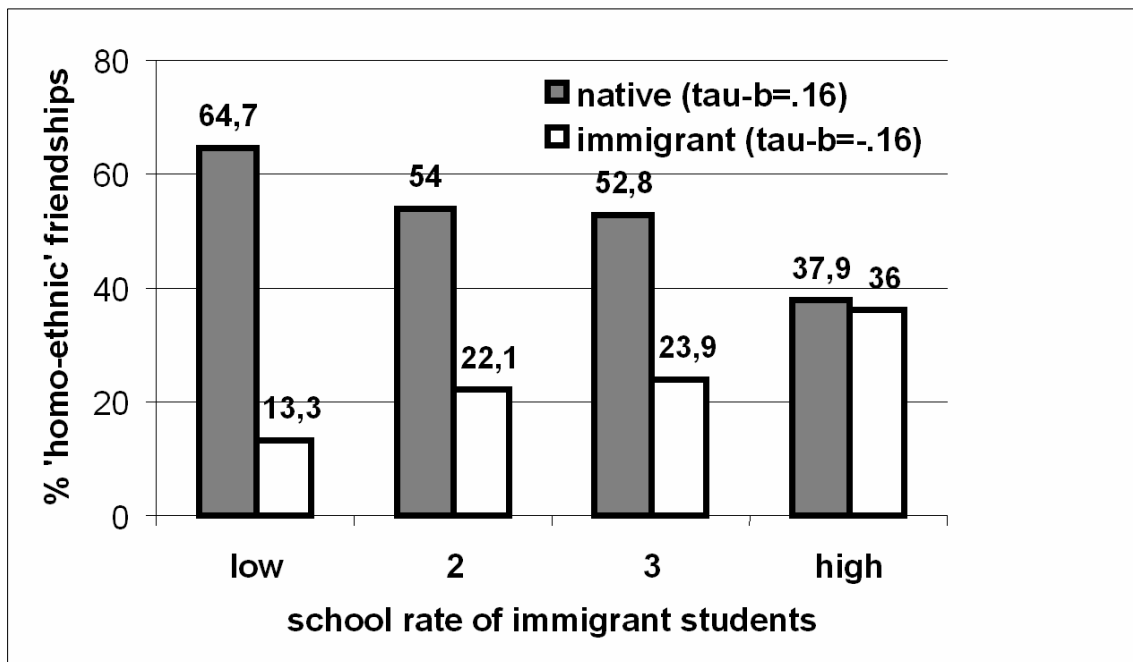


Source: MPI-Youth Survey 1999/2000, Cologne and Freiburg, N=5819 (3612 native, 628 mixed, 1510 immigrant background).

Graph 13a shows that native respondents living in neighbourhoods with the lowest share of immigrant youths have the lowest share of immigrant friends (around 36%). In neighbourhoods with the highest share of immigrant youths, almost 60% of native youths have immigrant friends. The converse is true for respondents with immigrant background: 31% in the most segregated quartile of neighbourhoods have primarily immigrant friends, whereas this number goes down to 23% for immigrant youths who live in less segregated areas. However, one can deduce from these figures that the large majority of immigrant respondents have at least one close German friend, even those respondents living in the most segregated areas.

Comparing these results with school level ethnic segregation, the effect is much more pronounced for the immigrant respondents (Graph 13b). Almost 90% of immigrant respondents attending schools with a low share of immigrant students have German friends. These students are presumably high-achievers at high-level secondary schools (*Gymnasium*).

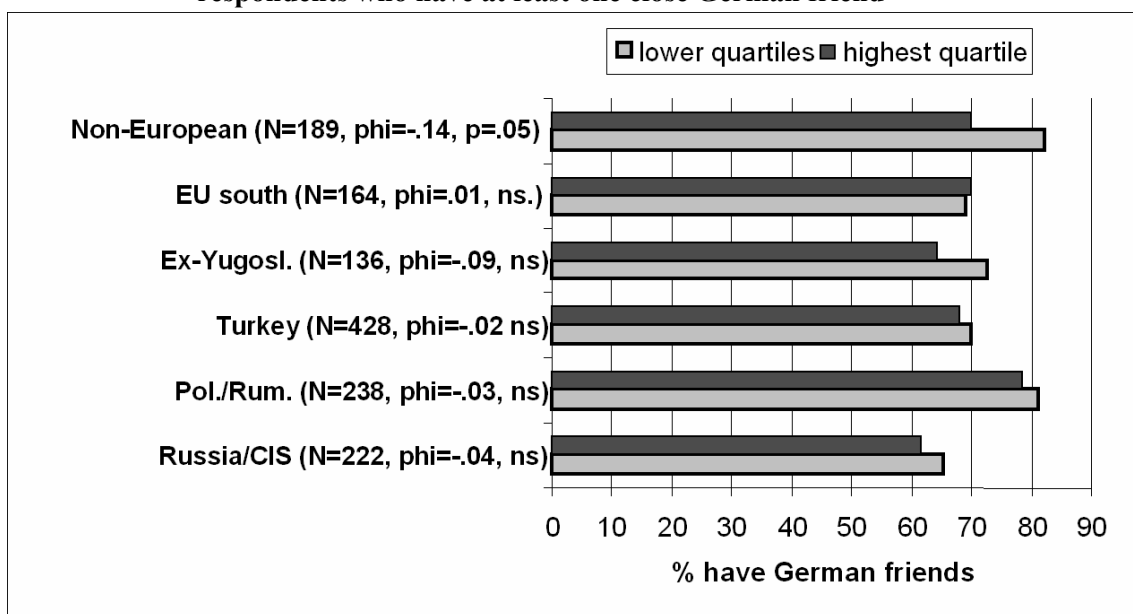
Graph 13b: Ethnic friendship patterns by school context: Percentage of respondents whose close friends are all native (for native backgrounds) or all immigrants (for immigrant backgrounds)



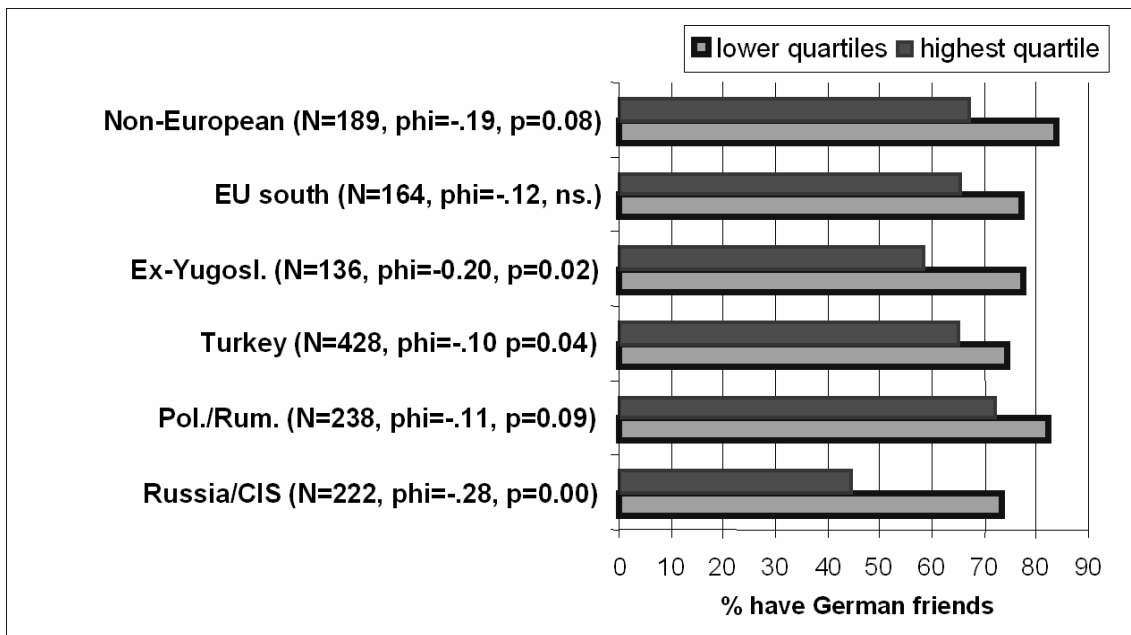
Source: MPI-Youth Survey 1999/2000, Cologne and Freiburg, N=5819 (3612 native, 1510 immigrant background).

Splitting up these results for particular ethnic groups (as far as the sample size allows), there are on the whole no marked differences, with the noticeable exception of immigrants from the former Soviet Union who are less well integrated in terms of having native German friends (Graph 14a-b). This could be due to the fact that many of these adolescents only recently migrated to Germany. Here again, differences by ethnic composition of contexts are stronger on the school level than on the neighbourhood level.

Graph 14a: Ethnic friendship patterns by neighbourhood context: Percentage of respondents who have at least one close German friend



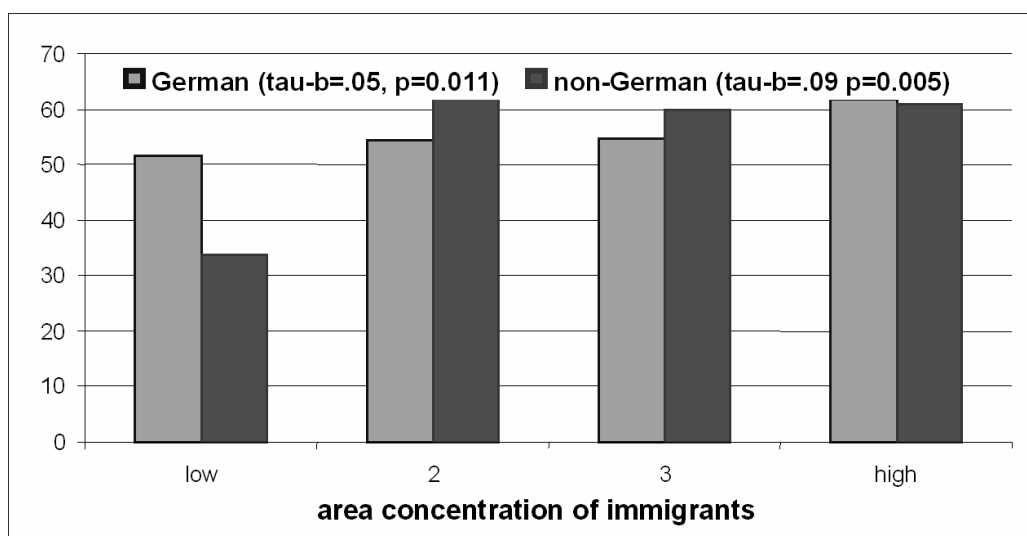
Graph 14b: Ethnic friendship patterns by school context: Percentage of respondents who have at least one close German friend



Source: MPI-Youth Survey 1999/2000, Cologne and Freiburg.

Graph 15 finally looks at the spatial orientation of friendship circles. Between 50 and 60% of respondents have predominately local friendship networks within their own neighbourhood, irrespective of migration status and ethnic concentration. Only immigrant respondents living in the neighbourhoods with very low shares of immigrants often look for friends outside of their neighbourhood. This can be seen as a confirmation of the hypothesis outlined above that the integration of immigrant youths in ‘better off’ neighbourhoods seems to be more problematic than in other neighbourhoods.

Graph 15: Spatial friendship patterns by individual ethnicity and area concentration of immigrants: Percentage of those who have close friends predominantly from own neighbourhood

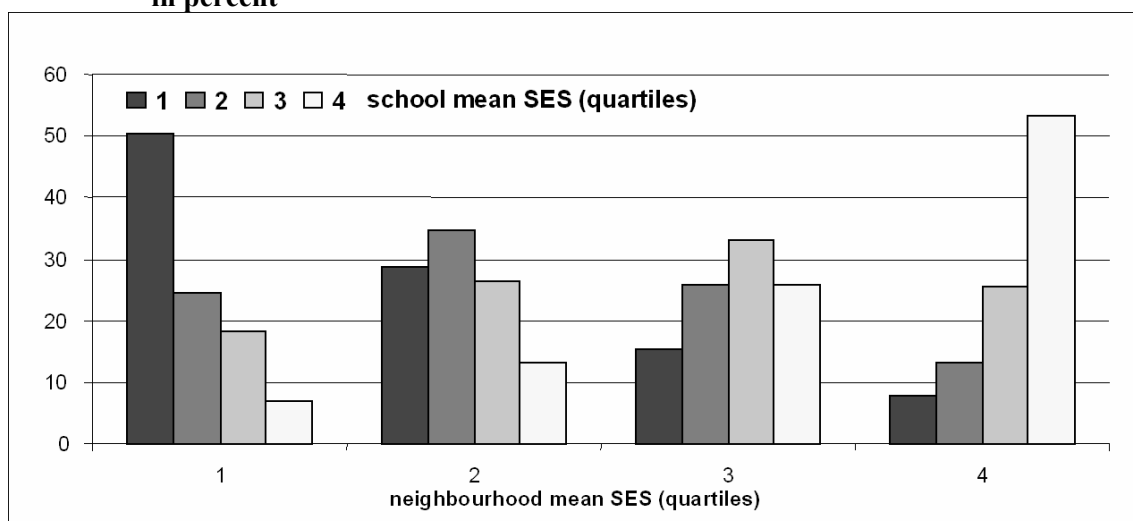


Source: MPI-Youth Survey 1999/2000, Cologne and Freiburg, N=5317.

3.6 Neighbourhoods and schools as overlapping but independent contexts

The spatial location of schools has a strong impact on the spatial distribution of friendship circles. An adolescent who attends a school far away from home inevitably meets and befriends more peers from other neighbourhoods than an adolescent who attends a local school. And, as an ecological context in its own right, the school, its teachers, and its social ‘climate’ may influence the attitudes and behaviour of children and adolescents independently from the residential neighbourhood context. In the Cologne sample, only a fifth of respondents attended a school in their own neighbourhood, and for approximately half of the respondents, the school was more than 2 kilometres away from the respondent’s home. The choice of schools and resultant spatial relations between home and school depend on educational policies and legal frameworks. In the German case, the secondary school system is highly selective based on academic achievement at the end of primary school. Because academic achievement has been shown to be closely associated with social class in Germany (Baumert et al. 2001), the traditional three-tier system of lower, intermediate and higher-level secondary schools tends to reflect the stratification within German society. However, within this selective three-tier system, parents – at least in big cities – have a choice between schools and are not forced to send their children to schools in a catchment area (which is the case in the United Kingdom). As a result of this framework, adolescents are exposed to a considerable variation between neighbourhood-level and school-level social composition, as can be seen in Graph 16. This graph illustrates how respondents from different levels of neighbourhood poverty are distributed among schools with different levels of ‘school poverty’, both measured by the average socio-economic status (SES) of the respondent’s parents. Half of respondents living in a very low SES neighbourhood (first quartile) also attended a school with a very low mean parental SES, but about a quarter of them attended schools with an above average SES. Students from the middle quartiles of neighbourhood poverty are almost equally distributed across various degrees of social disadvantage on the school level.

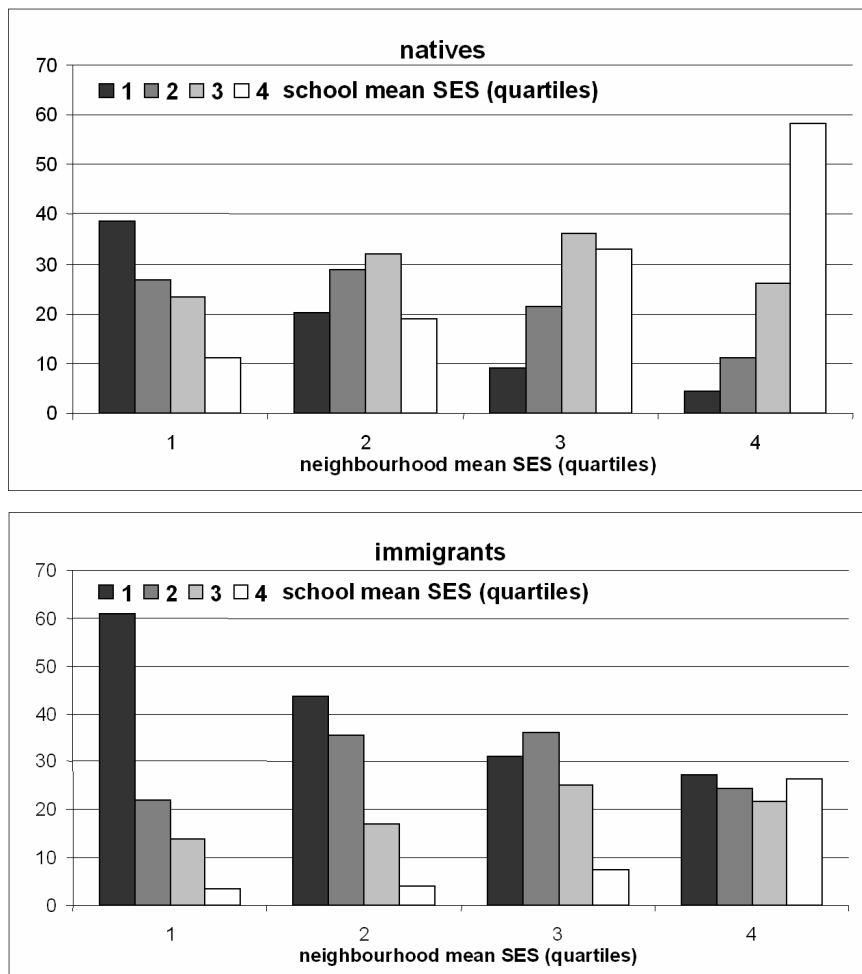
Graph 16: Allocation of adolescents to schools by school and neighbourhood SES in percent



Source: MPI-Youth Survey 1999/2000. All respondents (Cologne, N=2862).

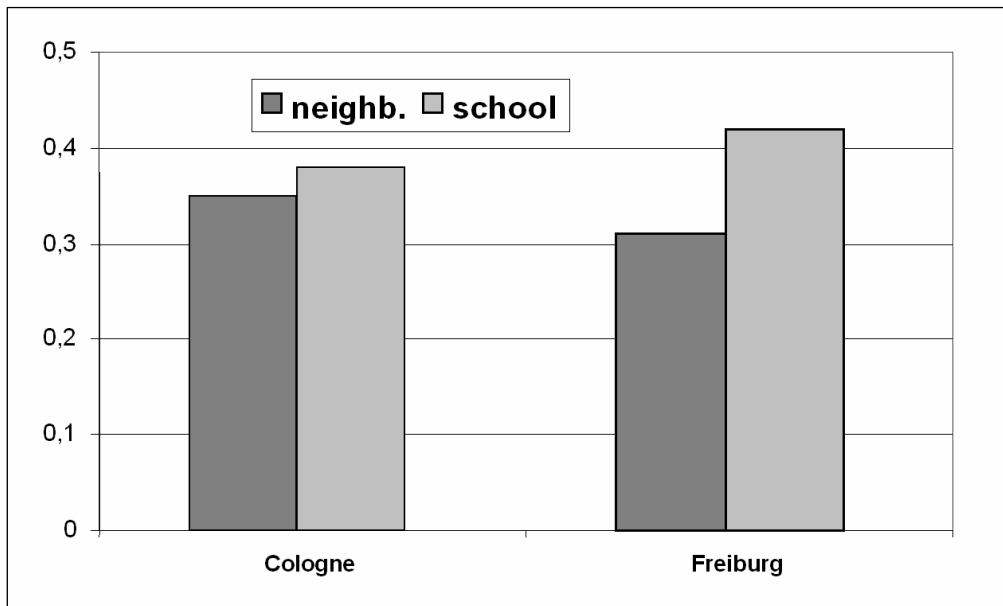
However, this picture differs dramatically when split up according to migration status (Graph 17). Compared to immigrant adolescents, native adolescents less often attend a low-SES school, even if they live in a low-SES neighbourhood. The share of immigrant adolescents who attend high-SES schools is much lower than the share of natives, even if they live in a high-SES neighbourhood. Due to the high social selectivity of the German school system, the ethnic segregation of adolescents is more extreme on the school level than on the neighbourhood level, as Graph 18 reveals for both Cologne and Freiburg.

Graph 17: Allocation of adolescents to schools by school and neighbourhood SES for natives and immigrants



Source: MPI-Youth Survey 1999/2000, Cologne and Freiburg, N=5819.

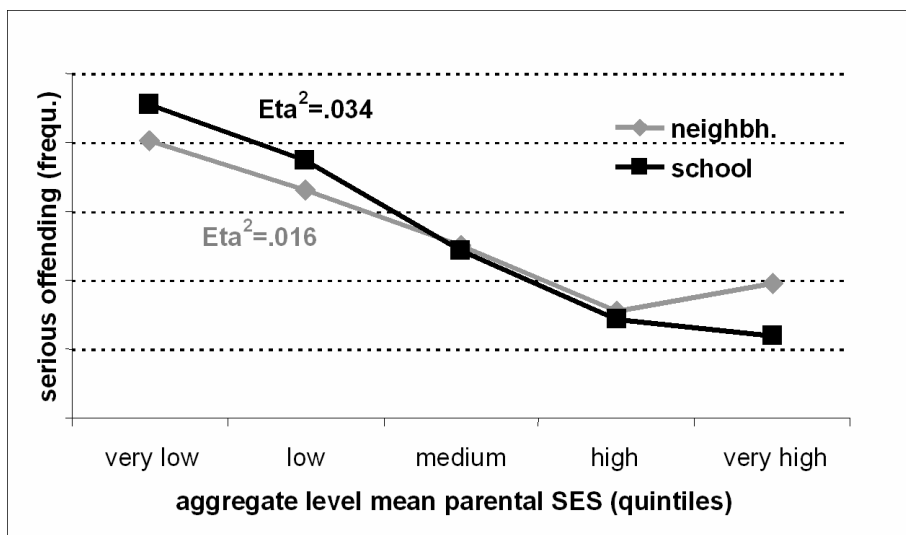
Graph 18: Index of dissimilarity for immigrant vs. native children, neighbourhood and school context compared



Source: Official data and MPI-Youth Survey 1999/2000, Cologne and Freiburg, N=5819.

The important research question is whether this higher segregation along ethnic lines and socio-economic levels in schools corresponds with different ecological contexts in shaping the behaviour and psychosocial development of adolescents. Graph 19 is a first attempt to answer this question.

Graph 19: Neighbourhood vs. school level associations between serious offending and parental SES



Source: MPI-Youth Survey 1999/2000, Cologne, N=2862.

Using the same definitions as in the previous graphs, the association between social context and serious adolescent delinquency is significantly stronger on the school level than on the neighbourhood level. On the school level, the group of respondents in the lowest quintile of mean parental SES reports more crime (and those in the highest quintile of mean parental SES report less crime) than the respective neighbourhood-level groups.

The results displayed in Graph 19 could be a compositional effect that simply reflects the higher levels of segregation. In order to shed more light on this question and to answer the question of relative importance of neighbourhood and school contexts, I shall present tentative results of the so-called cross-classified multilevel models, in which individuals are simultaneously nested into two contexts; the influence of each context is estimated while controlling for the other context (Browne et al. 2001). This recent statistical innovation is well suited for dealing with social conditions in which individuals are placed in and influenced by two contexts at the same time. The models presented here are preliminary, and further analyses are required. Table 5 presents models for the German respondents.

Table 5: Multilevel cross-classified linear model of serious offending by native adolescents in neighbourhood and school contexts

	Model 1			Model 2		
	<i>unstand. B-coeff.</i>	<i>t-value</i>	<i>Sign.</i>	<i>unstand B-coeff.</i>	<i>t-value</i>	<i>Sign.</i>
Fixed effects - L1 (n=3212 native respondents)						
Incomplete family	0.032	4.9	***	0.031	4.7	***
Parental SES	-0.002	-0.5	ns.	0.006	1.6	ns.
Unemployed/welfare recip. > 6 months	0.023	2.0	*	0.016	1.4	ns.
Violence tolerance (scale 0-3)	0.109	28.5	***	0.107	28.1	***
Constant	0.044	4.0	***	0.053	5.5	***
Fixed effects – neighbh. level (n=61)						
Welfare rate (under 18 yrs) ^{a,b}	--			0.013	3.0	**
Fixed effects – school level (n=68)						
Mean parental SES ^a	--			-0.032	-7.0	***
Random effects	var. comp.	reduction of var. vs. empty model		var comp	reduction of var. vs. model 1	
Level 1 – respondents	0.02520	19.8%		0.02541	19.1%	
Level 2 – neighbourhoods	0.00061	3.2%		0.00032	49.2%	
Level 2 – schools	0.00131	71.9%		0.00011	91.7%	

^a z-transformed ^b official data

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Source: MPI Youth Survey 1999/2000, Cologne and Freiburg, N=3212 native respondents in N=61 neighbourhoods.

The first of the models in Table 5 only uses the sub-sample of native respondents and controls for socio-demographic composition and ‘violence tolerance’, an attitude known to be closely related to self-reported offence. The third section of Table 5 reports to what extent the ICCs for neighbourhood and school contexts are reduced by controlling for individual variables, as compared to the empty model. Only three percent of the neighbourhood-level variance is accounted for by the socio-demographic composition and the respondents’ attitude toward violence, whereas these factors account for 72% of the school-level variance. In effect, this means that the majority of school differences in delinquency reported above is due to a compositional effect, not to a ‘true’ contextual effect. However, the potential school effect on delinquency is still double the size of the potential neighbourhood effect (0.0131 vs. 0.0061).

In the second model in Table 5, poverty indicators are introduced for both contexts in order to explain neighbourhood and school differences in delinquency by the concentration of poverty. Both predictors are significant and explain half of the remaining context-level variance for neighbourhood effects and almost all remaining variance for school effects, suggesting the existence of both neighbourhood and school contextual effects on adolescent delinquency. Again, the school poverty predictor indicates a stronger school effect than the neighbourhood effect, but considering the limitations of this cross-sectional study, particularly the selection bias, one should treat these results with caution. It is also noteworthy that poverty is rendered insignificant on the individual level after context-level poverty is introduced to the model. This lends support to the hypothesis that poverty does not affect delinquency directly on the individual level, but works through macro-level social processes (Sampson/Wilson 1995).

Finally, the models presented in Table 6 repeat the cross-classified approach for immigrant respondents. As we did not find any signs for a potential contextual effect on the neighbourhood level, context-level predictors are introduced in model 2 only for the school context. Both the mean social status of parents and the sex ratio have significant explanatory effects on school differences in serious criminal offences by immigrant youths. However, the percentage of immigrant students is insignificant. This finding indicates that social segregation, rather than ethnic segregation, is a significant factor in adolescent problem behaviour, which is in line with the findings of Baumert et al. (2005).

Table 6: Multilevel cross-classified linear model of serious offending by immigrant adolescents in neighbourhood and school contexts

	Model 1			Model 2		
	<i>unstand. B-coeff.</i>	<i>t-value</i>	<i>Sign.</i>	<i>unstand. B-coeff.</i>	<i>t-value</i>	<i>Sign.</i>
Fixed effects - L1 (n=1036 immigrant respond.)						
Incomplete family	0.046	2.3	*	0.048	2.4	*
Parental SES	0.000	0.2	ns.	-0.027	-1.0	ns.
Unemployed/welfare recip. > 6 months	0.010	0.7	ns.	0.005	0.3	ns.
Violence tolerance (scale 0-3)	0.110	13.5	***	0.108	13.5	***
Constant	0.108	11.8	***	0.112	12.9	***
Fixed effects – neighbh. level (n=60) --						
Fixed effects – school level (n=74)						
% non-German students ^b				0.000	0.9	ns
Mean parental SES ^a				-0.027	-2.6	*
% girls				-0.165	-2.3	*
Random effects	var. comp.	reduction of var. vs. null-model		var comp	reduction of var. vs. model 1	
Level 1 – respondents	0.03491	19,1		0.03461	--	
Level 2 – neighbourhoods	0.00032	39,6		0.00032	--	
Level 2 – schools	0.00247	23,5		0.00177	28,3	

^a z-transformed ^b official data

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Source: MPI Youth Survey 1999/2000, Cologne and Freiburg, N=1036 immigrant respondents.

4. Summary and outlook

Research on contextual effects of social and ethnic segregation on children and adolescents in Germany (and in Europe) has yet to produce solid conclusions on which we can base practical policies. The multilevel study on deviant behaviour of adolescents reported in this expertise, which appears to be one of the first large-scale survey-based studies in Germany designed to identify contextual effects, has produced various findings intended to stimulate discussions and direct future research. Yet, due to the complexity of analyses and the limitations of cross-sectional research, it should be viewed only as a starting point.

The study found empirical evidence for the existence of neighbourhood and school contextual effects on adolescent delinquency. However, these effects are mainly restricted to native German adolescents. Only the behaviour of girls from immigrant families showed significant evidence of neighbourhood effects, but in the opposite direction than expected. The results for native adolescents highlighted the role of peer relations as a decisive social mechanism that translates the concentration of poverty into

problem behaviour. Adolescents who spend much of their time outside of their own neighbourhood with friends from other neighbourhoods are apparently not as strongly affected by neighbourhood effects as would be expected. The interesting question then becomes – apart from the location of schools, which have been proven to be an overlapping but independent context – what factors influence these spatial choices and preferences of adolescents. There is in all likelihood a strong element of agency involved which runs counter to the crude idea of ghettoisation.

The available, however patchy, empirical evidence points to the conclusion that ethnic segregation is less problematic than social segregation. The concentration of social problems – poverty, unemployment, lack of education – which affects native and immigrant families alike is the real challenge for social policy.

The puzzle of why immigrant boys do not show similar reactions to concentrated disadvantage, and of why girls show opposite effects, remains largely unsolved. It seems evident, however, that the place of residence is not a decisive factor in shaping the behaviour of immigrant youths. School contexts, on the other hand, are more relevant for both native and immigrant adolescents. Subsequent analyses should investigate the interactions between neighbourhood and school contexts. For instance, is a positive school environment sufficient to make adolescents resilient against problematic neighbourhood environments, and vice versa? In addition, more research is needed on the selection process which determines primary and secondary school choices, and possible contextual effects on this process. The finding that school contexts are likely to be at least as relevant as neighbourhood contexts is of high political relevance. Educational policy apparently offers a powerful leverage for measures aimed at countering the negative consequences of ethnic and social segregation.

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Programme on Intercultural Conflicts and Societal Integration

The Programme (AKI) at the Social Science Research Center Berlin (WZB) focuses on reviewing and evaluating research results from different disciplines in the thematic field of immigrant integration and intercultural conflicts. It thus aims to contribute to discussions about future directions of academic research and to provide accessible and sound evaluations of existing knowledge and policy options.

The Programme starts from the assumption that a wealth of models and findings are available in academic scholarship that could help German society deal with challenges arising from migration and ethnic plurality. However, this potential is often not fully exploited. The Programme aims to address this deficit by helping to promote co-operation and communication between researchers, policy-makers and the wider public. It also aims to encourage interdisciplinary dialogue and to contribute to a higher profile within academia and German society of research into migration and intercultural conflicts.

The Programme began in 2003. It is funded by the Federal Ministry of Education and Research and affiliated with the WZB's research area Civil Society, Conflict and Democracy. AKI has a steering group as well as its own advisory committee comprising experts with a policy or media background and scholars from Germany and abroad.

Topics include

- migration and illegality
- language and integration
- educational participation
- urban segregation
- official data on the integration of individuals with an immigrant background and of members of ethnic minorities

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Publications

Miles Hewstone, *Neuere Forschungen über Intergruppenkonflikte: Konsequenzen für den Umgang mit Migration und Integration*, WZB discussion paper Nr. SP IV 2004-601, Berlin 2004.

Karen Schönwälder, Dita Vogel, Giuseppe Sciortino, *Migration und Illegalität in Deutschland*. AKI-Forschungsbilanz 1, Berlin 2004.

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All publications are available online: www.aki.wzb.eu