# Ethnic, Religious and Economic Diversity in the Neighbourhood: Explaining Quality of Contact with Neighbours, Trust in the Neighbourhood and Inter-ethnic Trust for Immigrant and Native Residents

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**Ethnic, Religious and Economic Diversity in the Neighbourhood: Explaining Quality of Contact with Neighbours, Trust in the Neighbourhood and Inter-ethnic Trust for Immigrant and Native Residents**

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**Abstract**. Several studies conclude that ethnic diversity tends to reduce social capital. There may however be other forms of diversity that affect social capital as well, and their inclusion might make the negative effect of ethnic diversity spurious. Besides ethnic diversity, we identify economic and religious diversity, as well as language proficiency in the neighbourhood. This study explores with data from the Netherlands how these four dimensions of diversity in the neighbourhood affect the quality of contact with neighbours, trust in neighbourhood and inter-ethnic trust for immigrant and native residents. We find that ethnic diversity in the neighbourhood still lowers the quality of contact with the neighbours. For natives, ethnic diversity is positively associated with inter-ethnic trust, whereas for immigrants there is no effect. Furthermore, for natives, religious diversity negatively affects the quality of contact with the neighbours and interethnic trust, whereas for immigrants this effect is positive. Economic diversity positively impacts trust in the neighbourhood and inter-ethnic trust. We do not find an effect of language proficiency. We conclude that besides ethnic diversity, other forms of diversity in the neighbourhood affect trust as well. Furthermore, diversity can undermine, but also build various aspects of trust. Last, diversity in the neighbourhood does not mean the same for immigrant and native residents.

Key words: ethnic diversity, economic diversity, religious diversity, trust, neighbourhoods.

## Introduction

Recently, there has been ample attention for the relation between ethnic diversity and social capital in the neighbourhood. Several scholars report that ethnic diversity reduces social cohesion and social capital (Putnam 2007; Letki 2008; Leigh 2006; Stolle, Soraka and Johnston 2008; Lancee and Dronkers 2009). Putnam (2007) for example, claims that in the short run, immigration and ethnic diversity tend to reduce solidarity and social capital. He presents evidence from the USA that in ethnically diverse neighbourhoods residents of all ethnic groups tend to 'hunker down'. However, the current studies do not take sufficiently into account other types of diversity in the neighbourhood. If other dimensions of neighbourhood diversity are equally important, analyses that do not take these other dimensions into account are flawed. The main contribution of this paper is to include several relevant forms of diversity in the neighbourhood simultaneously, and analyze its effect on trust in the neighbourhood.

Lancee and Dronkers (2009) confirmed that Putnam's findings are also valid for the Netherlands. At least at the short term there exists a negative relation between ethnic diversity in the neighbourhood and neighbours on the one hand, and the quality of contact with neighbours and trust in the neighbourhood on the other hand. However, the Dutch results for trust in other ethnic groups than one's own were different from those of Putnam (2007). Ethnic diversity in the neighbourhood did not affect the level of interethnic-trust negatively. In contrast, having ethnically different neighbours increases inter-ethnic trust. Tolsma, van der Meer and Gesthuizen (2009) found with other, but comparable Dutch data the same results.

The central argument of these studies is however, that diversity (in whatever aspect) has detrimental effects on trust. For example, when explaining social trust in the neighbourhood, Leigh (2006) finds (with Australian data) that for both immigrants and natives, linguistic diversity reduces trust even more than ethnic diversity does. Letki (2008) finds for the UK that, apart from ethnic diversity, a low socio-economic status of the neighbourhood is the main source of low social

capital. Both scholars conclude that for a good analysis of the impact of ethnic diversity in the neighbourhood, other measures of diversity need to be taken into account as well.

Nonetheless, these studies include only one or two measures of diversity. There are no studies that simultaneously analyze the impact of these types of diversity in the neighbourhood on social capital. To better understand the importance of ethnic diversity in the neighbourhood, a study that includes multiple measures of diversity is necessary in order to avoid significant effects, which are spurious after the inclusion of all forms of diversity. This paper introduces four measures of diversity: ethnic, economic, religious and language proficiency. Our main question is "To what extent does ethnic, economic, religious and language diversity in the neighbourhood correspond with trust in neighbourhood, inter-ethnic trust and the quality of contact with neighbours, after controlling for other individual, neighbourhood, and municipality characteristics?"

## Theory and hypotheses

### *Social capital and trust*

There are many different forms or elements of social capital; consequently even more definitions of the concept are being applied. As a result, Putnam (2007) chooses to adopt a 'mean and lean' definition: 'social networks and the associated norms of reciprocity and trustworthiness'. A helpful approach when conceptualizing social capital is to distinguish between structural and cognitive social capital (Lancee 2009; Harell and Stolle 2009). The structural component refers to the 'wires' in the network: the frequency and intensity of links that contribute to the exchange of resources. As opposed to cognitive social capital, structural social capital involves a behavioural component. The cognitive component refers to the 'nodes' in a network: attitudes and values such as perceptions of support, reciprocity and trust that contribute to the exchange of resources.

Most of the measures presented by Putnam (2007) -i.e. social trust and solidarity- can be characterised as cognitive social capital. However, when analyzing social capital in the neighbourhood, the measurement benefits from including a behavioural component as well.

Besides the difference in cognitive and structural, social capital is a concept that cuts through 'thematic' dimensions. Scholars exploring the relation between diversity and social capital include multiple measures of social capital: having social ties in the neighbourhood (Letki 2008; Lancee and Dronkers 2009) the likelihood that a lost wallet is returned (Stolle, Soraka and Johnston 2008; Letki 2008); group involvement (Putnam 2007; Letki 2008); generalised trust (Leigh 2006); inter-ethnic trust (Putnam 2007; Lancee and Dronkers 2009) and trust in one's neighbours (Putnam 2007; Letki 2008). For the analysis of the impact of ethnic diversity on social capital, especially the differentiation between inter-ethnic trust and more general forms of trust is of importance. It may be that living in an ethnically diverse neighbourhood affects people's trust towards other ethnic groups differently than social relations between people in general.

We analyse three dependent variables that cover the inter-ethnic and the more general dimension of trust, as well as the cognitive and structural part of social capital. We construct three scales: *1)* the quality of contact with the neighbours, *2)* trust in the neighbourhood and *3)* inter-ethnic trust. Although we realise that these measures do not cover the entire spectrum of social capital, and that these measures may also be causally related themselves, we take these scales as proxies for social trust in the neighbourhood.

*Contact and conflict theory*

Putnam (2007: 141-142) discusses two theories that deal with diversity and social connections. According to the 'contact theory', more diversity implies more inter-ethnic tolerance and social solidarity. The reasoning is that 'as we have more contact with people unlike us, we overcome initial barriers of ignorance and hesitation and come to trust them more'. This line of reasoning stems from the intergroup theory, which originates from Allport (1979) and is extended by Pettigrew (1998). Intergroup theory states that contact between groups is maximumal when five conditions are met: equal status between groups, common goals to be reached, intergroup cooperation, support of laws and customs and the potential to friendship. The theory predicts

prejudice to be minimal when the intergroup contact is maximal; many studies also found this result (see Pettigrew 1998).

Conflict-theory argues exactly the opposite: diversity fosters out-group distrust and in-group solidarity. In other words, the more we are brought into physical proximity to people that are different, the less we trust the 'other'. Putnam subsequently introduces 'constrict theory', suggesting that ethnic diversity might reduce both in-group and out-group trust. His (implicit) argumentation is that when the social context is more diverse in terms of ethnic groups, there are more people 'unlike you'. As a result, there are less people with whom one can identify, resulting in fewer social connections and lower levels of trust. That is, ethnic diversity may correlate negatively with all dimensions of social capital (see also Allen and Cars 2001; Alesina and La Ferrara 2002; Letki 2008).

*Ethnic diversity*

We follow Putnam and his 'constrict' hypothesis, but reformulate his general hypothesis by including other dimensions of diversity:

H1a 'Ethnic diversity in the neighbourhood negatively affects the quality of contact with neighbours and trust in the neighbourhood, both for immigrant and native residents, irrespectively of the economic, religious and language diversity of the neighbourhood'

With respect to inter-ethnic trust, there may however be competing hypotheses. According to the contact argument we would expect a positive relationship: more exposure to ethnically different people increases trust in people that have a different ethnicity. According to the constrict argument, we would expect a negative relationship: diversity reduces all forms of trust. Putnam (2007) does report a negative relation between ethnic diversity and trust in other races, but does not present multivariate analyses to proof that the correlation is not spurious. Moreover, Lancee and Dronkers

(2009) and Tolsma, et al. (2009) found a positive effect of ethnic diversity of the neighbourhood on interethnic trust, even in multivariate analysis. We expect that this result will not change by including economic, religious or language diversity. We therefore hypothesise that

H1b: Ethnic diversity in the neighbourhood positively affects inter-ethnic trust, both for immigrant and native residents, irrespectively of the economic, religious and language diversity of the neighbourhood'

*Economic diversity*

Several scholars report a relation between economic disadvantage and lower social capital. For example, an economically disadvantaged neighbourhood is a main factor in eroding inter-personal trust (Ross, Mirowsky and Pribesh 2001) and generalised trust (Marschall and Stolle 2004; Alesina and La Ferrara 2002). Oliver and Mandelberg (2000) show that a low economic status environment triggers negative attitude towards other ethnic groups, rather than the ethnic diversity of the environment. Letki (2008) shows that the socio-economic status of the neighbourhood has a stronger impact on social capital than ethnic diversity.

Economic status in a neighbourhood is however not the same as economic diversity. While the former indicates the average economic position of the residents, the latter measures their chances to meet residents with a different economic position. The same argument may hold for measures of inequality, such as the Gini coefficient. For example, Alesina and Ferrara (2002) find that more inequality lowers trust. Their argument is that in communities with high inequality, the share of poor people is higher, and since poor people generally have lower levels of trust, as an equilibrium response to a low trust environment, everybody trusts less.

When a neighbourhood is economically more *diverse*, this does not necessarily mean there are more poor people: it means that the different income groups are more equal in size. With respect to economic diversity in a neighbourhood, we follow the contact argument and expect a positive

effect on trust. The argument is that people with a different economic background are less likely to compete with each other. They may even be complementary: a consultant needs a bakery, a renter profits from the owner renovating his house and making the street more attractive to live in. In other words, more economic differences in the neighbourhood implies opportunities to build bridging ties that are likely to be positive in terms of social capital. The conflict argument states that meeting different people results in less trust. In this case, there is no potential 'conflict': economic differences are beneficial; hence there is no reason to expect the conflict argument. .

Although economic diversity and deprivation of neighbourhoods are related, one should distinguish between these two indicators: they are conceptually not equal and have quite different policy implications. We therefore hypothesise that

H2 'Economic diversity in the neighbourhood positively affects the quality of contact with neighbours, trust in the neighbourhood and interethnic trust, both for immigrant and native residents, independently of the mean income in the neighbourhood and irrespectively of ethnic, religious and language diversity of the neighbourhood.

*Religious diversity*

McKay (1985) examines the effect of religious differences on the identity structures of ethnic groups. In 1985 he already concludes (1985: 327): 'religion can divide more than ethnicity can unite'. In other words, religious differences may partly explain the effect of ethnic diversity. There is little knowledge how religious diversity in neighbourhoods affects social capital. Conflict-theory would argue that religious diversity fosters out-group distrust and in-group solidarity. High religious diversity implies big differences between people with respect to their identity, norms and values. It is therefore likely that the conditions identified by Pettigrew (1998) for optimal intergroup contact are not met (such as common goals to be reached, or support of customs). We therefore hypothesise that

H3 ‘Religious diversity in the neighbourhood negatively affects the quality of contact with neighbours, trust in the neighbourhood and inter-ethnic trust, both for immigrant and native residents’, independent of the religious affiliation and religious activity of the respondent, and irrespectively of the ethnic, economic and language diversity of the neighbourhood’

*Language proficiency*

In explaining trust, Leigh (2006) finds that linguistic diversity in the neighbourhood is more important than ethnic diversity. Furthermore, there is some evidence that language proficiency of immigrants is associated with better interethnic relations (Espenshade and Calhoun 1993). We do not have data on the different languages that are spoken by people in a neighbourhood, but we do have data on the Dutch language proficiency of the four main non-western immigrant groups. We therefore constructed a measure of Dutch language proficiency on the neighbourhood level. According to the contact argument: a higher level of Dutch language proficiency in the neighbourhood implies less barriers between people, resulting in higher levels of social capital. We therefore hypothesise that:

H4 Dutch language proficiency in the neighbourhood positively affects the quality of contact with neighbours, trust in the neighbourhood and interethnic trust, both for immigrant and native residents, independently of individual language proficiency’.

**Data and measurement**

For measurement, we use the ‘Sociale Positie en Voorzieningengebruik van Allochtonen’ (Social Position and Facilities Use of Ethnic Minorities, SPVA; Martens 1999). The SPVA survey is the main data source for monitoring the disadvantage of ethnic minorities in the Netherlands. The SPVA samples households from the four largest immigrant ethnic minority groups in the

Netherlands (Turks, Moroccans, Surinamese and Antilleans) and a comparable native Dutch sample. It is a stratified sample, in which the respondents are selected in thirteen communities with relatively large numbers of these four minority groups. Whereas the share of immigrants in the sample is larger than in the Dutch population, the survey aims to be representative for the Netherlands with respect to the characteristics of the communities and the socio-economic background of the respondents.

Within the SPVA, an individual is classified into a minority group if he or she was born in the respective country or if one of their parents was born there. First generation immigrants are defined as those who are born in Turkey, Morocco, Suriname or the Dutch Antilles. Second generation immigrants are those that are born in the Netherlands with at least one parent born in one of the aforementioned countries, or those that are born abroad and migrated to the Netherlands at an age younger than six.

Since the SPVA provides the four-digit zip codes of the respondents, we use this as the neighbourhood level in our analyses. Dutch four-digit zip codes can be linked to local neighbourhoods ('buurten'), as defined by the municipalities.[i] Since the borders often mark building styles and -periods as well, neighbourhoods are relatively homogenous with respect to socio-demographic characteristics (Wittebrood and Van Dijk 2007). Dutch zip code areas are somewhat less homogenous than neighbourhoods, because, as opposed to neighbourhoods, the borders of Dutch zip code areas are defined to facilitate the postal distribution process, not as an indication of local neighbourhoods. However, the size of the population in a zip code areas is very similar across the Netherlands just like the USA census tracts, while the size of the population of neighbourhoods varies more.

*The dependent variables*

We construct three measures of social trust in the neighbourhood.[ii] First, we construct a scale that measures the quality of contact with one's direct neighbours. Second, we build a scale that

measures trust in one's neighbourhood. These scales contain items on: the opinion with respect to the neighbours and neighbourhood, the quality and frequency of contact with one's direct neighbours and people in the neighbourhood. The third dependent variable can be seen as measure of social distance or inter-ethnic trust, containing two items measuring the respondent's opinion on the ethnic background of a hypothetical partner and friends of one's children, ranging from very disturbing to not disturbing at all (comparable to Bogardus 1933). These three scales are referring to different forms of social trust: the first refers to the quality of contact with the direct neighbours, the second to trust in the neighbourhood and the third to trust between ethnic groups. The correlations between the three indicators underline this difference: between the first two it is .50, between the first two and the last zero (see table 2).

To measure the different forms of social capital, a non-parametric IRT model for finding cumulative scales is used: the so-called 'Mokken scaling method' (Mokken 1996) as well as reliability analysis. The Mokken analysis and the Cronbach's Alpha reported in the appendix (available from the authors) show that each of the scales has the same psychometric characteristics for the five ethnic groups included. Whereas these scales contain both cognitive and behavioural items, the scaling techniques used clearly indicate that the items in the scales measure a single construct. A detailed description of the construction of the scales and their psychometric characteristics can be found in Lancee and Dronkers (2009).

*Independent variables at the individual level*

We control for the following: gender, age, being married, educational attainment, religious affiliation, religious activity, family income, home ownership, Dutch citizenship, ethnicity and being a second-generation immigrant. Furthermore, to control for the language proficiency of the respondent we constructed a Mokken scale[iii] (see Lancee and Dronkers (2009).

*Independent variables at the zip code and municipality level*

On the zip code level we include the following variables, obtained from the 'Kerncijfers wijken en buurten 2004', provided by Statistics Netherlands. First, based on the percentage of ethnic groups that lives in the respective zip code area, we construct a Herfindahl index of ethnic diversity (range: -1 till 0)[iv]. A value of -1 on the index implies no diversity at all, i.e. the neighbourhood consists of one ethnic group only. A higher value means that more people in the neighbourhood have a different ethnicity and these groups are of more equal size. The Herfindahl index is criticised to be 'colour blind' (Stolle, Soraka and Johnston 2008; Voas, Crockett and Olson 2002). That is, a neighbourhood with 20 percent immigrants and 80 percent natives has the same score as the reverse. Whereas one might argue that this is exactly the objective of an index of diversity, the specific ethnic composition of a neighbourhood does matter. Therefore, additional analyses were done with the percentage of native Dutch as well as with the percentage of immigrants in the neighbourhood. The results are similar to that when including the Herfindahl index.

The measure of economic diversity is a Herfindahl index based on the percentage of people in the neighbourhood with an income lower than or equal to 40, between 41 and 80, and above 80 percentage points of the national income distribution[v]. Higher economic diversity therefore implies that these three income groups are more equal in size; a lower economic diversity means that one of the groups is larger than the others.

Religious diversity is measured with a Herfindahl index containing the fraction of people in the neighbourhood that define themselves as belonging to a certain religion. The categories included are: Catholic, Protestant, Sunnites; Shiites Alevi, Ahmadiyya plus other Islam; Sanatam Dharam; Arya Samaj plus other Hindu, no religion or other religion[vi]. The interpretation is similar to that of the index of ethnic diversity: the minimum means that there is one religion in the neighbourhood; the maximum implies that everybody in the neighbourhood has a different religious denomination.

Last, language proficiency is measured as the Dutch language proficiency per ethnic group per neighbourhood, weighted by the number of people in each ethnic group that lives in the respective neighbourhood. We include the following ethnic groups: Turks, Moroccans, Surinamese, Antilleans, EU immigrants, native Dutch, other non-western immigrants.[vii]

Furthermore, we control for the mean income, population density of the neighbourhood and the percentage of people that is older than sixty-five years.

**Results**

In table 1A, a descriptive overview of the individuals in the sample is presented, Table 1B presents the descriptive statistics of the two variables at the zip code level. [viii]

INSERT TABLE 1A & 1B

Table 2 shows the correlations between the three dependent variables and the diversity indices. Only the language and the ethnic diversity indices are highly correlated (-.86), which means that they have a large common component (about 74%). Analyses (not shown here) do not show a too high level of multicollinearity[ix]. Economic diversity is negatively related with ethnic diversity (-.48), but they have only 23% in common. Religious diversity is positive related to ethnic diversity (.55), and they have 30% in common. Trust in neighbourhood and quality of contact with neighbours are positive related (.49) but, given a common component of 24%, they can not considered to be the same.

Insert table 2

*Quality of contact with the neighbours*

Table 3 presents a multilevel regression model predicting the quality of contact with the direct neighbours. Model 1 only contains the indices of diversity; the coefficient of ethnic diversity is negative and significant, but the coefficient of religious diversity is positive. This means that respondents have lower quality contact with neighbours in ethnically diverse neighbourhoods but higher quality contact with neighbours in religiously diverse neighbourhoods. We expected the former result, but not the latter. Language and economic diversity have no significant effect. In model 2, the ethnic groups and a dummy for second-generation immigrants are added. Whereas for the Turks and Moroccans the quality of contact with their neighbours is not different from the native Dutch, the Surinamese, Antilleans and the second-generation immigrants have a lower quality of contact with their neighbours than the Dutch do. The coefficients of ethnic and religious diversity remain significant. Controlling for the remaining individual characteristics (model 3), we see that the effects of ethnic and religious diversity hardly diminish and remain significant. Furthermore, when controlling for individual characteristics, only Turks have a significantly higher quality of contact with their neighbours, when compared to the native Dutch. Age, being married, attendance of religious services, language proficiency and house ownership increase the quality of contact with neighbours. Model 4 introduces the neighbourhood characteristics. After this inclusion the parameter of religious diversity becomes insignificant, while that of ethnic diversity becomes even more negative. In model 5 we add the hypothesised interactions between forms of diversity and being Dutch. Only one interaction is significant: Dutch residents living in religious diverse neighbourhood have a lower quality contact with their neighbours (.034-.069), while the immigrant residents in these religious diverse neighbourhoods have a higher quality contact with their neighbours (.034). The effect of neighbourhoods' ethnic diversity remains unchanged by this inclusion.

These results support our first hypothesis: living in a more ethnically diverse neighbourhood decreases the quality of contact with neighbours, independently of the other types of diversity. Our

second hypothesis on the positive effect of economic diversity on quality of contact with neighbours is not upheld by our data. Our third hypothesis on the effect of religious diversity on the quality of contact with neighbours is partly upheld by our data: the effect is negative for Dutch residents and positive for immigrant residents. Individual attendance of religious services increases the quality of contact with neighbours. Finally, our fourth hypothesis on the positive effect of Dutch language proficiency in the neighbourhood on quality of contact with neighbours is not upheld by our data. Individual Dutch language proficiency does increase the quality of contact with neighbours.

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Table 3 about here

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*Trust in the neighbourhood*

In table 4, we present an analogous multilevel analysis explaining trust in the neighbourhood. Model 1 shows a negative relationship between ethnic diversity and trust in the neighbourhood, but a positive relation between religious diversity and trust in neighbourhood. We expected the former result, but not the latter. Language and economic diversity have no significant effect on the trust in the neighbourhood. In model 2 it appears that Turks trust their neighbourhood more than native Dutch, Antilleans and second-generation immigrants less. The negative effect of ethnic diversity becomes smaller but is still significant, while the positive relation between religious diversity and trust in neighbourhood becomes insignificant. When including the individual level characteristics (model 3), only individual characteristics have significant parameters: age, being married, attendance of religious services, Dutch language proficiency and house ownership have a positive effect on trust in neighbourhood, while having a university or college degree has a negative effect. The four dimensions of neighbourhood diversity have no significant effect anymore. In model 4 the neighbourhood characteristics are added. Although both population density and neighbourhood income have a negative effect on trust neighbourhood, the effect of economic diversity becomes

positive and significant. In model five we add the hypothesised interactions between forms of diversity and being Dutch. Only one interaction is significant: Dutch residents living in religiously diverse neighbourhoods have lower trust in their neighbourhood (-.112), while the religious diversity of the neighbourhood does not affect the trust of immigrant residents in their neighbourhood. However, the effect of neighbourhoods' economic diversity remains unchanged by this inclusion.

These results do not support our first hypothesis: living in a more ethnically diverse neighbourhood is not related to trust in the neighbourhood, independently of the other dimensions of diversity. Our second hypothesis on the positive effect of economic diversity on trust in the neighbourhood is upheld by our data. However, a higher average income of the neighbourhood decreases trust; individual family income has no effect. Our third hypothesis on the effect of religious diversity is partly upheld by our data: religiously diverse neighbourhoods decrease the trust of Dutch residents, but not for immigrants. However, individual religious service attendance increases trust in the neighbourhood. Finally, our fourth hypothesis on the positive effect of Dutch language proficiency in the neighbourhood on trust in the neighbourhood is not upheld by our data. But individual Dutch language proficiency increases trust in the neighbourhood.

Table 4 about here

*Inter-ethnic trust*

In table 5 we present an analogous multilevel analysis explaining inter-ethnic trust. Model 1 shows multivariate relations between diversity and inter-ethnic trust. Religious diversity negatively affects inter-ethnic trust; ethnic and economic diversity, as well as language proficiency positively affect inter-ethnic trust. Model 2 shows that Surinamese and Antilleans have higher inter-ethnic trust than natives, while second generations immigrants have higher inter-ethnic trust than first generation immigrants or natives. However the coefficients of ethnic diversity and language proficiency

become insignificant, while the effects of economic and religious diversity become smaller but are still significant. After addition of individual characteristics, all significant effects of neighbourhood's diversity disappear. Only individual level variables have significant effects. Residents being Hindu or Muslim have lower inter-ethnic trust than non-religious residents, but also the attendance of religious services decreases inter-ethnic trust. Dutch citizenship and Dutch language proficiency increases inter-ethnic trust, just like having a secondary education. Second generation immigrants do not have more inter-ethnic trust after the inclusion of the individual characteristics, while all immigrant groups have a higher inter-ethnic trust than Dutch residents do. After the addition of neighbourhood characteristics, economic diversity becomes significant and positive again, although none of the added variables is significant. In model 5 we add the hypothesised interactions between forms of diversity and being Dutch. Two interactions are significant: *1)* Dutch residents living in religiously diverse neighbourhoods have lower inter-ethnic trust (-.106), while the religious diversity of the neighbourhood does not affect the inter-ethnic trust of immigrant residents. *2)* Dutch residents living in ethnically diverse neighbourhoods have higher inter-ethnic trust (.255), while ethnic diversity does not affect the inter-ethnic trust of immigrant residents. Nevertheless, the effect of neighbourhoods' economic diversity remains unchanged by this inclusion.

These results only partly support our first hypothesis: living in a more ethnically diverse neighbourhood is positively related to inter-ethnic trust, but this is only true for Dutch natives. Our second hypothesis on the positive effect of economic diversity on inter-ethnic trust is upheld by our data. Our third hypothesis on the effect of religious diversity on inter-ethnic trust is partly upheld by our data: Dutch residents of religiously diverse neighbourhoods have lower inter-ethnic trust, but this is not true for immigrants. Moreover, individual religious service attendance decreases inter-ethnic trust. Finally, our fourth hypothesis on the positive effect of Dutch language proficiency in the neighbourhood on inter-ethnic trust is not upheld by our data. But individual Dutch language proficiency increases inter-ethnic trust.

Table 5 about here

**Discussion**

The main finding is the importance of other types of diversity in the neighbourhood for the variation in social trust of residents. Religious diversity in neighbourhoods decreases the quality of contact with neighbours, trust in the neighbourhood and inter-ethnic trust, but only for the Dutch natives. Economic diversity in neighbourhoods increases trust in the neighbourhood and inter-ethnic trust. The negative effect of ethnically diverse neighbourhoods on the quality of contact with neighbours remains significant, even if one controls for other dimensions of diversity: economic, religious and language. This is however the only significant effect of ethnic diversity on social trust. We do not find an association between ethnically diverse neighbourhoods and trust in the neighbourhood, neither for the immigrants, nor for the natives.

Moreover, Dutch natives living in an ethnically diverse neighbourhood have *more* inter-ethnic trust than Dutch natives living in less diverse neighbourhoods. In other words, the quality of contact with one's neighbours is something else than trust in other ethnic groups than one's own. This is reflected in our results: ethnic diversity has a positive effect on the level of inter-ethnic trust of Dutch residents, but a negative effect on the quality of contact with neighbours for everybody.

Apparently, some forms of diversity in the neighbourhood fit in the 'contact argument', while other forms have an opposite effect and follow the 'conflict' argument. A possible explanation for this bifurcation can be found in the inter-group theory (Allport 1979; Pettigrew 1998). Intergroup theory states that the positive impact of contact between different (ethnic) groups is at a maximum when five conditions are met: equal status between groups, common goals to be reached, inter-group cooperation, support of laws and customs and the potential to friendship. Whether diversity in the neighbourhood fosters or detriments social trust, depends on meeting or not meeting these conditions. An explanation can be that ethnic and religious diversity imply

dealing with different values and norms. Adherents of different religions and persons originating from different ethnic cultures can more easily collide about values and norms, thus making it less likely that conditions for optimal contact are met, such as common goals or the support of customs. Put differently: when values and norms are too different, conditions for optimal contact are not met.

The negative effect of ethnically diverse neighbourhoods on the quality of contact with neighbours shows that Putnam's (2007) result is also valid in an European welfare state like the Netherlands. We do however not find any support for the constrict hypothesis, as formulated by Putnam (2007): ethnic differences in neighbourhoods in the Netherlands result in *more* inter-ethnic trust for the native residents. Apparently, when being confronted with ethnic diversity in the neighbourhood, the general trust is lower, but this effect cannot be attributed to less trust in other ethnic groups. Ethnic diversity in the neighbourhood makes contact between ethnic groups unavoidable; this might lead to more inter-ethnic trust compared with a situation of no contact between ethnic groups.

On the other hand, an economically diverse neighbourhood might contribute to some of the conditions outlined by Allport, and hence facilitate contact between different (ethnic) groups. That is, economic differences in the neighbourhood also imply dealing with different values and norms, but these are less linked to one's identity and hence do not result in less trust. On the contrary: economic differences can be synergetic and therefore contribute to meeting the conditions for optimal contact between groups, both with respect to the neighbourhood and other ethnic groups.

Another conclusion from our analyses is that policies aiming at ethnically diverse neighbourhoods in order to promote ethnic integration at the societal level might have an unintended inverse effect of decreasing the quality of the contact with the neighbours (compare with Musterd 2003). Promoting economically diverse neighbourhoods in order to build more (inter-ethnic) trust has a better chance of being a successful policy. Moreover, policymakers should not confuse ethnic with economic diversity; our analyses clearly show that these are two different concepts.

Finally, our results show that diversity in the neighbourhood does not only have negative effects on social trust. A higher level of diversity can under certain conditions help to overcome cleavages between ethnic and religious groups. This can be interpreted as support for the optimistic vision of Putnam on the long-term possibilities of integration of these ethnic and religious groups.

## Notes

[i] For more information on our measurement and handling of neighbourhoods, see Lancee and Dronkers (2009).

[ii] More information about the scale items is available in the appendix, obtainable from the authors.

[iii] The language items were not included for the native Dutch respondents, since it is their mother tongue. Therefore, the natives were given the highest value on the scale.

[iv] The index of ethnic diversity is a Herfindahl index, calculated as follows: $HI = -1 * (\Sigma p_i^2)$, where $p_i$ is the proportion of each ethnic group in neighbourhood i. The ethnic groups included are: Turks, Moroccans, Antilleans, Surinamese, Other non-western immigrants, Western immigrants, native Dutch. The data used is the 'Kerncijfers wijken en buurten 2004', obtained from Statistics Netherlands.

[v] Statistics Netherlands provides the fraction of people in a neighbourhood that has an income below 40 percentage points of the national income distribution, between 41 and 80 and above 80 percentage points.

[vi] Since religious denomination is not (publicly) available on the neighbourhood level, we used the data from the SPVA survey and Statistics Netherlands to construct a measure on the neighbourhood level. In the SPVA, people are asked to mention their religious affiliation. , In order to realise the highest N possible in all neighbourhoods, the 1994, 1998 and 2002 waves of the SPVA are pulled. Second, since the SPVA sample is not representative for the neighbourhood, the fraction of ethnic groups that live in a neighbourhood according to Statistics Netherlands is used to weigh the survey information. By combining denomination and ethnicity from the SPVA with true neighbourhood values of the ethnic groups as provided by Statistics Netherlands, the result is the fraction of people in a neighbourhood that considers themselves to be belonging to a certain religion. These fractions are converted in a Herfindahl index, as described in note four.

[vii] The measure for language proficiency in the neighbourhood is constructed similar to that of religious diversity. The language proficiency scores per ethnic group in the combination of 1991, 1994, 1998 and 2002 waves of the SPVA were weighted by the fraction of the ethnic group that lives in the neighbourhood. Native Dutch received the highest value on the scale.

[viii] Initially, we controlled on the neighbourhood level for the %in high education, % renters, moving house mobility, and on the municipality level for % violent crimes, urban domicile, but they are insignificant and do not affect the other parameters.

[ix] First, there were no 'jumping' parameters. Second, collinearity diagnostics were performed. The highest VIF is 8.27 for ethnic diversity. This is high, but below the often mentioned threshold of 10. Third, we estimated the (full) models excluding one measure of diversity each time. This did not yield substantially different results, with one exception: when excluding ethnic diversity, language proficiency positively affects trust in one's direct neighbours.

## References


Alesina, A.and La Ferrara, E. (2002) 'Who trusts others?', *Journal of Public Economics, 85*(2), 207-234.

Allen, J.and Cars, G. (2001) 'Multiculturalism and governing neighbourhoods', *Urban Studies, 38*(12), 2195-2209.

Allport, G. W. (1979) *The nature of prejudice*. Cambridge, MA: Perseus Books.

Bogardus, E. S. (1933) 'A social distance scale', *Sociological Social Research 17*(1), 265-271.

Espenshade, T. J.and Calhoun, C. A. (1993) 'An Analysis of Public Opinion toward Undocumented Immigration', *Population Research and Policy Review, 12*(189-224).

Harell, A.and Stolle, D. (2009) 'Recociling diversity and community? Defining social cohesion in developed democracies', in M. Hooghe (ed) *Social Capital and Social Cohesion. Interdisciplinary Theoretical Perspectives*. Brussels: Royal Academy of Sciences.

Lancee, B. (2009) 'The economic returns of immigrants' bonding and bridging social capital. The case of the Netherlands', *International Migration Review, Forthcoming December 2009*.

Lancee, B.and Dronkers, J. (2009) 'Ethnic diversity in neighborhoods and individual trust of immigrants and natives: A replication of Putnam (2007) in a West-European Country', in M. Hooghe (ed) *Social capital and social cohesion. Interdisciplinary theoretical perspectives*. Brussels: Royal Academy of Sciences.

Leigh, A. (2006) 'Trust, inequality and ethnic heterogeneity', *The Economic Record, 82*(258), 268-280.

Letki, N. (2008) 'Does diversity erode social cohesion? Social capital and race in British neighbourhoods', *Political Studies, 56*(1), 99-126.

Marschall, m. J.and Stolle, D. (2004) 'Race in the city: neighborhood context and the development of generalized trust', *Political Behavior, 26*(2), 125-153.

Martens, E. P. (1999) *Minderheden in beeld, SPVA-98*. Rotterdam: Instituut voor Sociologisch-Econmisch Onderzoek (ISEO).

McKay, J. (1985) 'Religious diversity and ethnic cohesion: a three generational analysis of Syrian-Libanese Christians in Sydney', *International Migration Review, 19*(2), 318-334.

Mokken, R. J. (1996) ' Nonparametric models for dichotomous responses', in W. J. Van Der Linden and R. K. Hambleton (eds) *Handbook of Modern Item Response Theory*. New York: Springer, 351-367.

Musterd, S. (2003) 'Segregation and integration: a contested relationship', *Journal of Ethnic and Migration Studies, 29*(4), 623-641.

Oliver, J. E.and Mandelberg, T. (2000) 'Reconsidering the environmental determinants of white racial attitudes', *American Journal of Political Science, 44*(3), 574-589.

Pettigrew, T. (1998) 'Intergroup contact theory', *Annual Review of Psychology, 49*, 65-85.

Putnam, R. D. (2007) 'E Pluribus Unum: Diversity and community in the twenty-first century. The 2006 Johan Skytte prize lecture.', *Scandinavian Political Studies, 30*(2), 137-174.

Ross, C. E., Mirowsky, J.and Pribesh, S. (2001) 'Powerlessness and the amplification of threat: neighborhood disadvantage, disorder and mistrust', *American Sociological Review, 66*(4), 568-591.

Stolle, D., Soraka, S.and Johnston, R. (2008) 'When does diversity erode trust? Neighborhood diversity, interpersonal trust and the mediating effect of social interactions', *Political Studies, 56*, 57-75.

Tolsma, J., Van der Meer, T.and Gesthuizen, M. (2009). 'The impact of neighbourhood and municipality characteristics on social cohesion in the Netherlands', *Acta Politica, 44*(3), 286-313.

Voas, D., Crockett, A.and Olson, D. V. A. (2002) 'Religious pluralism and participation: why previous research is wrong', *American Sociological Review, 67*(2), 212-230.

Wittebrood, K.and Van Dijk, T. (2007) *Aandacht voor de wijk. Effecten van herstructurering op de leefbaarheid en de veiligheid.* The Hague: Sociaal Cultureel Planbureau.

## Table 1A. Descriptive statistics individual level and zip code variables.

| | Native Dutch | | Immigrants | | Immigrants+ Natives | |
|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | Mean | SD |
| Quality of contact with neighbours | 0.64 | 0.13 | 0.61 | 0.14 | 0.61 | 0.14 |
| Trust in the neighbourhood | 0.65 | 0.18 | 0.62 | 0.18 | 0.63 | 0.18 |
| Inter-ethnic trust | 0.69 | 0.22 | 0.72 | 0.27 | 0.71 | 0.26 |
| Age | 50.46 | 17.82 | 39.49 | 12.81 | 41.1 | 14.2 |
| Dutch Language proficiency | 1 | 0 | 0.6 | 0.33 | 0.66 | 0.34 |
| Family income | 3451.84 | 2118.41 | 2648.35 | 1462.86 | 2765.8 | 1600.86 |
| Church attendance | 0.24 | 0.33 | 0.51 | 0.40 | 0.47 | 0.40 |
| | % | N | % | N | % | N |
| Married | 38.12 | 276 | 45.48 | 19,10 | 44.39 | 2.186 |
| Female | 48.20 | 350 | 40.07 | 1,683 | 41.27 | 2.032 |
| Religious affiliation | | | | | | |
| No religion | 50.83 | 368 | 9.74 | 409 | 15.78 | 777 |
| Hindu | 0.14 | 1 | 8.55 | 359 | 7.31 | 360 |
| Muslim | 0.14 | 1 | 50.81 | 2,134 | 43.36 | 2.135 |
| Christian | 45.72 | 331 | 28.52 | 1,198 | 31.05 | 1,529 |
| Other religion | 2.76 | 20 | 1.64 | 69 | 1.81 | 89 |
| Educational Degree | | | | | | |
| Primary | 22.65 | 164 | 48.07 | 2.019 | 44.33 | 2,183 |
| Lower Secondary | 24.17 | 175 | 19.50 | 819 | 20.19 | 994 |
| Upper Secondary | 22.38 | 162 | 19.98 | 839 | 20.33 | 1,001 |
| College/University | 28.45 | 206 | 9.52 | 400 | 12.31 | 606 |
| No info on educational level | 2.35 | 17 | 2.93 | 123 | 2.84 | 140 |
| Dutch citizen | 100 | 1,143 | 70.31 | 2,53 | 74.68 | 3,677 |
| Owns house | 42.96 | 311 | 12.57 | 528 | 17.04 | 839 |
| Distribution ethic groups | | | | | % | N |
| Turks | | | | | 21.04 | 1,036 |
| Moroccans | | | | | 21.69 | 1,086 |
| Surinamese | | | | | 26.62 | 1,311 |
| Antilleans | | | | | 15.94 | 785 |
| Native Dutch | | | | | 14.70 | 724 |
| Sample | | | | | 100 | 4,924 |

Source: SPVA 1998

**Table 1B. Descriptive statistics zip code and municipality level variables.**

| | | Mean | Sd | Range |
|---|---|---|---|---|
| Zip code level (N=260) | Ethnic Diversity | -0.29 | 0.2 | -1-0 |
| | Religious diversity | -0.32 | 0.2 | -1-0 |
| | Dutch language proficiency | 0.57 | 0.24 | 1-0 |
| | Economic diversity | -0.09 | 0.06 | -1-0 |
| | Mean income per person | 0.48 | 0.09 | 0-1 |
| | Population density | 0.37 | 0.2 | 0-1 |
| | % over 65 years old | 0.33 | 0.15 | 0-1 |

Source: Statistics Netherlands, SPVA survey (1991, 1994, 1998, 2002)

**Table 2. Correlations between diversity in the neighbourhood and the dependent variables.**

| | Ethnic diversity | Dutch language proficiency | Economic diversity | Religious diversity | Quality contact with neighbours | Trust in neighbourhood |
|---|---|---|---|---|---|---|
| Dutch language proficiency diversity | -0.86 | 1 | | | | |
| Economic diversity | -0.48 | 0.55 | 1 | | | |
| Religious diversity | 0.55 | -0.57 | -0.41 | 1 | | |
| Quality contact with neighbours | -0.13 | 0.11 | 0.07 | -0.03 | 1 | |
| Trust in neighbourhood | -0.14 | 0.13 | 0.08 | -0.05 | 0.49 | 1 |
| Inter-ethnic trust | -0.09 | 0.17 | 0.13 | -0.11 | 0.00 | -0.00 |

**Table 3. Multilevel linear regression predicting quality of contact with one's neighbours, $N_{indiv}$= 4,924; $N_{zipcode}$= 260; $N_{mun}$= 13 (standardised coefficients 0-1, standard errors between brackets).**

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | b | se | b | se | b | se | b | se | b | se |
| *Diversity* | | | | | | | | | | |
| Ethnic Diversity | -.124*** | (.025) | -.107*** | (.025) | -.082*** | (.025) | -.069** | (.025) | -.084** | (.027) |
| Religious diversity | .046** | (.014) | .041** | (.014) | .031* | (.014) | .023 | (.015) | .034* | (.016) |
| Dutch language proficiency | -.006 | (.021) | .008 | (.022) | .009 | (.021) | .010 | (.023) | .013 | (.023) |
| Economic diversity | .014 | (.059) | .009 | (.059) | -.007 | (.058) | .078 | (.078) | .080 | (.081) |
| *Individual characteristics* | | | | | | | | | | |
| Dutch | | | ref. | | ref. | | ref. | | ref. | |
| Turkish | | | .003 | (.007) | .029* | (.013) | .028* | (.013) | -.012 | (.038) |
| Moroccan | | | -.009 | (.007) | .017 | (.013) | .016 | (.013) | -.024 | (.038) |
| Surinamese | | | -.015* | (.007) | .001 | (.008) | -.001 | (.008) | -.041 | (.036) |
| Antillean | | | -.031*** | (.007) | -.002 | (.008) | -.003 | (.009) | -.044 | (.036) |
| Second generation | | | -.020** | (.008) | -.010 | (.008) | -.010 | (.008) | -.009 | (.008) |
| Female | | | | | .002 | (.005) | .002 | (.005) | .002 | (.005) |
| Age | | | | | .073*** | (.013) | .076*** | (.013) | .076*** | (.013) |
| Married | | | | | .016** | (.005) | .015** | (.005) | .016** | (.005) |
| Church attendance | | | | | .045*** | (.006) | .045*** | (.006) | .045*** | (.006) |
| No religion | | | | | ref. | | ref. | | ref. | |
| Hindu | | | | | -.002 | (.010) | -.002 | (.010) | -.001 | (.010) |
| Muslim | | | | | -.004 | (.010) | -.003 | (.010) | -.003 | (.010) |
| Christian | | | | | -.010 | (.007) | -.010 | (.007) | -.008 | (.007) |
| Other religion | | | | | -.021 | (.016) | -.022 | (.016) | -.022 | (.016) |
| Primary education | | | | | ref. | | ref. | | ref. | |
| Lower secondary | | | | | .006 | (.006) | .006 | (.006) | .006 | (.006) |
| Upper secondary | | | | | .009 | (.006) | .009 | (.006) | .009 | (.006) |
| College/University | | | | | -.001 | (.007) | .001 | (.007) | -.001 | (.008) |
| No info on educational level | | | | | .022 | (.012) | .022 | (.012) | .022 | (.012) |
| Language proficiency | | | | | .046*** | (.010) | .045*** | (.010) | .045*** | (.010) |
| Dutch citizen | | | | | .006 | (.006) | .006 | (.006) | .006 | (.006) |
| Family income | | | | | .030 | (.023) | .031 | (.023) | .032 | (.023) |
| Home ownership | | | | | .029*** | (.006) | .029*** | (.006) | .030*** | (.006) |
| *Neighbourhood characteristics* | | | | | | | | | | |
| Mean income per person | | | | | | | -.081 | (.052) | -.092 | (.052) |
| Population density | | | | | | | -.027 | (.016) | -.024 | (.016) |
| % over 65 years old | | | | | | | -.010 | (.019) | -.007 | (.019) |
| *Interaction terms* | | | | | | | | | | |
| Dutch* Ethnic diversity | | | | | | | | | .054 | (.060) |
| Dutch*Income diversity | | | | | | | | | .059 | (.143) |
| Dutch*religious diversity | | | | | | | | | -.069* | (.034) |
| Dutch*language diversity | | | | | | | | | -.058 | (.064) |
| Constant | .598*** | (.012) | .604*** | (.014) | .489*** | (.019) | .551*** | (.033) | .592*** | (.044) |
| Log-likelihood | 2668.8 | | 2688.6 | | 2778.0 | | 2781.2 | | 2785.2 | |
| AIC | -5323.5 | | -5353.1 | | -5500.0 | | -5500.4 | | -5500.5 | |
| Proportion reduced variance | | | | | | | | | | |
| Level 2 (zip code) | .56 | | .59 | | .61 | | .67 | | .68 | |
| Level 1 (individual) | .00 | | .01 | | .04 | | .04 | | .05 | |

Source: SPVA 1998, Statistics Netherlands, * p<0.05, ** p<0.01, *** p<0.001

**Table 4. Multilevel linear regression predicting trust in the neighbourhood $N_{indiv}$= 4,924; $N_{zipcode}$= 260; $N_{mun}$= 13 (standardised coefficients 0-1, standard errors between brackets).**

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | b | se | b | se | b | se | b | se | b | se |
| *Diversity* | | | | | | | | | | |
| Ethnic Diversity | -.131*** | (.034) | -.106** | (.033) | -.063 | (.033) | -.032 | (.033) | -.048 | (.036) |
| Religious diversity | .041* | (.019) | .035 | (.019) | .014 | (.019) | -.005 | (.019) | .014 | (.021) |
| Dutch language proficiency | .005 | (.030) | .028 | (.029) | .036 | (.029) | .024 | (.030) | .023 | (.032) |
| Economic diversity | .051 | (.082) | .055 | (.079) | .056 | (.079) | .234* | (.103) | .263* | (.108) |
| *Individual characteristics* | | | | | | | | | | |
| Dutch | | | ref. | | ref. | | ref. | | ref. | |
| Turkish | | | .023* | (.009) | .011 | (.017) | .009 | (.017) | .023 | (.048) |
| Moroccan | | | -.013 | (.009) | -.026 | (.017) | -.028 | (.017) | -.014 | (.048) |
| Surinamese | | | -.012 | (.009) | -.001 | (.010) | -.003 | (.010) | .010 | (.046) |
| Antillean | | | -.035*** | (.010) | -.006 | (.011) | -.008 | (.011) | .005 | (.046) |
| Second generation | | | -.015 | (.010) | .013 | (.010) | .014 | (.010) | .015 | (.010) |
| Female | | | | | .007 | (.006) | .006 | (.006) | .006 | (.006) |
| Age | | | | | .088*** | (.017) | .091*** | (.017) | .092*** | (.017) |
| Married | | | | | .028*** | (.007) | .026*** | (.007) | .027*** | (.007) |
| Church attendance | | | | | .053*** | (.008) | .053*** | (.008) | .052*** | (.008) |
| No religion | | | | | ref. | | ref. | | ref. | |
| Hindu | | | | | .006 | (.013) | .005 | (.013) | .007 | (.013) |
| Muslim | | | | | .019 | (.013) | .019 | (.013) | .020 | (.013) |
| Christian | | | | | -.000 | (.009) | -.001 | (.009) | .002 | (.009) |
| Other religion | | | | | -.022 | (.020) | -.024 | (.020) | -.023 | (.020) |
| Primary education | | | | | ref. | | ref. | | ref. | |
| Lower secondary | | | | | -.007 | (.007) | -.007 | (.007) | -.007 | (.007) |
| Upper secondary | | | | | -.015 | (.008) | -.014 | (.008) | -.015 | (.008) |
| College/University | | | | | -.025** | (.010) | -.023* | (.010) | -.025** | (.010) |
| No info on educational level | | | | | .015 | (.016) | .015 | (.016) | .015 | (.016) |
| Language proficiency | | | | | .036** | (.012) | .035** | (.012) | .036** | (.012) |
| Dutch citizen | | | | | -.008 | (.008) | -.008 | (.008) | -.008 | (.008) |
| Family income | | | | | .014 | (.029) | .015 | (.029) | .017 | (.029) |
| Home ownership | | | | | .050*** | (.008) | .052*** | (.008) | .053*** | (.008) |
| *Neighbourhood characteristics* | | | | | | | | | | |
| Mean income per person | | | | | | | -.133* | (.068) | -.156* | (.069) |
| Population density | | | | | | | -.054** | (.021) | -.053* | (.021) |
| % over 65 years old | | | | | | | .023 | (.025) | .026 | (.025) |
| *Interaction terms* | | | | | | | | | | |
| Dutch* Ethnic diversity | | | | | | | | | .073 | (.077) |
| Dutch*Income diversity | | | | | | | | | -.047 | (.183) |
| Dutch*religious diversity | | | | | | | | | -.112** | (.043) |
| Dutch*language diversity | | | | | | | | | -.005 | (.082) |
| Constant | .606*** | (.017) | .606*** | (.018) | .505*** | (.025) | .609*** | (.043) | .608*** | (.058) |
| Log-likelihood | 1459.0 | | 1484.7 | | 1591.3 | | 1598.3 | | 1602.0 | |
| AIC | -2904.0 | | -2945.4 | | -3126.6 | | -3134.5 | | -3134.0 | |
| Proportion reduced variance | | | | | | | | | | |
| Level 2 (zip code) | .43 | | .54 | | .54 | | .61 | | .60 | |
| Level 1 (individual) | .00 | | .01 | | .05 | | .05 | | .05 | |

Source: SPVA 1998, Statistics Netherlands; * p<0.05, ** p<0.01, *** p<0.001

**Table 5: Multilevel linear regression predicting inter-ethnic trust, $N_{indiv}$= 4,924; $N_{zipcode}$= 260; $N_{mun}$= 13 (standardised coefficients 0-1, standard errors between brackets).**

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | b | se | b | se | b | se | b | se | b | se |
| *Diversity* | | | | | | | | | | |
| Ethnic Diversity | .298*** | (.059) | .087 | (.045) | .030 | (.043) | .039 | (.044) | -.007 | (.047) |
| Religious diversity | -.074* | (.032) | -.060* | (.025) | -.035 | (.024) | -.045 | (.025) | -.025 | (.026) |
| Dutch language proficiency | .328*** | (.054) | .065 | (.040) | .009 | (.038) | .012 | (.040) | -.004 | (.042) |
| Economic diversity | .331* | (.139) | .253* | (.106) | .169 | (.100) | .286* | (.134) | .284* | (.139) |
| *Individual level characteristics* | | | | | | | | | | |
| Dutch | | | ref. | | ref. | | ref. | | ref. | |
| Turkish | | | -.119*** | (.011) | .065** | (.020) | .065** | (.020) | .079 | (.058) |
| Moroccan | | | -.110*** | (.011) | .067*** | (.020) | .067** | (.020) | .082 | (.058) |
| Surinamese | | | .154*** | (.011) | .224*** | (.012) | .223*** | (.012) | .238*** | (.056) |
| Antillean | | | .193*** | (.012) | .240*** | (.013) | .239*** | (.013) | .253*** | (.056) |
| Second generation | | | .047*** | (.012) | -.015 | (.012) | -.014 | (.012) | -.013 | (.012) |
| Female | | | | | .006 | (.007) | .006 | (.007) | .004 | (.007) |
| Age | | | | | .007 | (.020) | .008 | (.020) | .008 | (.020) |
| Married | | | | | -.025** | (.008) | -.026** | (.008) | -.025** | (.008) |
| Church attendance | | | | | -.079*** | (.009) | -.079*** | (.009) | -.081*** | (.009) |
| No religion | | | | | ref. | | ref. | | ref. | |
| Hindu | | | | | -.102*** | (.015) | -.103*** | (.015) | -.102*** | (.015) |
| Muslim | | | | | -.033* | (.016) | -.033* | (.016) | -.033* | (.016) |
| Christian | | | | | -.000 | (.010) | -.000 | (.010) | .003 | (.010) |
| Other religion | | | | | -.018 | (.024) | -.018 | (.024) | -.017 | (.024) |
| Primary education | | | | | ref. | | ref. | | ref. | |
| Lower secondary | | | | | .017 | (.009) | .017 | (.009) | .016 | (.009) |
| Upper secondary | | | | | .033*** | (.009) | .033*** | (.009) | .032*** | (.009) |
| College/University | | | | | .068*** | (.011) | .069*** | (.012) | .067*** | (.012) |
| No info on educational level | | | | | -.001 | (.019) | -.001 | (.019) | -.002 | (.019) |
| Language proficiency | | | | | .110*** | (.015) | .109*** | (.015) | .111*** | (.015) |
| Dutch citizen | | | | | .037*** | (.009) | .037*** | (.009) | .037*** | (.009) |
| Family income | | | | | -.013 | (.035) | -.011 | (.035) | -.011 | (.035) |
| Home ownership | | | | | .012 | (.009) | .013 | (.009) | .014 | (.009) |
| *Neighbourhood characteristics* | | | | | | | | | | |
| Mean income per person | | | | | | | -.101 | (.086) | -.140 | (.087) |
| Population density | | | | | | | .002 | (.027) | .003 | (.027) |
| % over 65 years old | | | | | | | .032 | (.032) | .036 | (.032) |
| *Interaction terms* | | | | | | | | | | |
| Dutch* Ethnic diversity | | | | | | | | | .255** | (.093) |
| Dutch*Income diversity | | | | | | | | | .205 | (.222) |
| Dutch*religious diversity | | | | | | | | | -.106* | (.053) |
| Dutch*language diversity | | | | | | | | | .127 | (.099) |
| Constant | .617*** | (.030) | .680*** | (.024) | .544*** | (.031) | .590*** | (.054) | .594*** | (.071) |
| Log-likelihood | -204.7 | | 456.3 | | 662.4 | | 663.3 | | 669.6 | |
| AIC | 423.5 | | -888.7 | | -1268.7 | | -1264.6 | | -1269.2 | |
| Proportion reduced variance | | | | | | | | | | |
| Level 2 (zip code) | .41 | | .76 | | .81 | | .82 | | .82 | |
| Level 1 (individual) | .00 | | .23 | | .29 | | .29 | | .29 | |

Source: SPVA 1998, Statistics Netherlands; * p<0.05, ** p<0.01, *** p<0.001

## Appendix

*Construction of the dependent variables using cumulative scaling*

For the measurement of trust we make use of Item Response Theory (IRT). IRT is used for modelling latent traits and is based on the pattern in the items regarding the number of people that gave a positive response. By taking into account the ordinal structure of the data, one constructs a scale that is not purely based on the correlation between the items. Since social trust is often understood in terms of 'more' and 'less' IRT, is especially suitable for measurement. It may therefore be more appropriate for scale construction than for example factor analysis (Van Schuur and Kiers 2004).

Therefore a non-parametric IRT model for finding cumulative scales is used, the so-called 'Mokken scaling method'. The software used is the Mokken Scale Analysis for Polytomous Items, MSPWIN 5.0 (Molenaar and Sijtsma 2000).This resulted in three scales (see tables A1, A3, A5). First, a scale that measures 'quality of contact with the neighbours'; containing items that deal with the intensity, quality and frequency of contact with the direct neighbours of the respondent. Second a scale that measures 'trust in the neighbourhood'. Third, a scale that measures social distance, or 'inter-ethnic trust'.

There are several criteria that a set of items has to meet to form an acceptable Mokken scale. The relevant coefficients are presented in tables A2, A4 and A6, both for the total sample and split out for the different ethnic groups. The most important measure is Loevinger's Homogeneity coefficient (H). The following cut-off values are conventional to judge a Mokken scale: >.30 being a useful scale, >.40 a medium strong scale, and >.50 a strong scale (Mokken 1996; Van Schuur 2003). For each of the scales, H >.4. Furthermore, the test for monotone homogeneity (i.e. the positive response to each item is a function of the positive response to easier items in the same scale) and double monotonicity (to assess whether the degree of difficulty across items is the same for all individuals) is positive. Last, the Cronbachs Alpha for the scales is satisfactory.

The actual scale consists of the sum of the items, and is than set to vary between 0 and 1. Before this computation, missing values for the individual items were imputed using two-way imputation (described in Sijtsma and Van der Ark 2003). The imputation is done as follows (Van Ginkel and Van der Ark 2007: 2): 'Let PMi be the average of all observed scores of respondent i, let IMj 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 Xij = PMi + IMj − 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.

**Table A1. Items scale 'trust in neighbours'.**

| Trust in neighbours | Mean | Range |
|---|---|---|
| Frequency of contact with one neighbour | 2.18 | 1-4 |
| Frequency of contact with other neighbour | 2.10 | 1-4 |
| Quality of contact with one neighbour | 3.83 | 1-5 |
| Quality of contact with other neighbour | 3.79 | 1-5 |
| Opinion on moving of one neighbour | 3.43 | 1-5 |
| Opinion on moving of other neighbour | 3.38 | 1-5 |
| Degree of nuisance with one neighbour (item reversed) | 2.82 | 1-3 |
| Degree of nuisance with other neighbour (item reversed) | 2.82 | 1-3 |

Source: SPVA 1998.

**Table A2. Scale values and coefficients 'trust in neighbours'.**

| | Scale value (0-1) | Homogeneity coefficient (H) | Cronbachs Alpha |
|---|---|---|---|
| Turks | .59 | .46 | .77 |
| Moroccans | .59 | .56 | .78 |
| Surinamese | .58 | .42 | .74 |
| Antilleans | .57 | .43 | .77 |
| Dutch | .61 | .37 | .70 |
| **Total** | **.59** | **.44** | **.75** |

Source: SPVA 1998.

**Table A3. Items scale 'trust in neighbourhood'.**

| Trust in neighbourhood | Mean | Range |
|---|---|---|
| Frequency of contact among people in the neighbourhood | 2.35 | 1-4 |
| Feels comfortable in this neighbourhood | 3.35 | 1-4 |
| Misses people in neighbourhood when they move | 1.44 | 1-3 |
| Quality of contact among people in the neighbourhood | 3.56 | 1-5 |

Source: SPVA 1998.

**Table A4. Scale coefficients 'trust in neighbourhood'.**

| | Scale value | Homogeneity coefficient (H) | Cronbachs Alpha |
|---|---|---|---|
| Turks | .65 | .40 | .61 |
| Moroccans | .61 | .42 | .70 |
| Surinamese | .62 | .46 | .64 |
| Antilleans | .60 | .47 | .62 |
| Dutch | .65 | .49 | .65 |
| **Total** | **.63** | **.45** | **.64** |

Source: SPVA 1998.

**Table A5. Items scale 'inter-ethnic trust'.**

| | Mean | Range |
|---|---|---|
| Opinion on ethnic background friends of children | 4.07 | 1-5 |
| Opinion on ethnic background partner of children | 3.68 | 1-5 |

Source: SPVA 1998.

**Table A6. Scale coefficients 'inter-ethnic trust'.**

| | Scale value | Homogeneity coefficient (H) | Cronbachs Alpha |
|---|---|---|---|
| Turks | .56 | .60 | .69 |
| Moroccans | .57 | .48 | .61 |
| Surinamese | .85 | .67 | .74 |
| Antilleans | .88 | .71 | .88 |
| Dutch | .69 | .63 | .79 |
| **Total** | **.72** | **.68** | **.76** |

Source: SPVA 1998.

## References


Mokken, R. J. (1996) ' Nonparametric models for dichotomous responses', in W. J. Van Der Linden and R. K. Hambleton (eds) *Handbook of Modern Item Response Theory*. New York: Springer, 351-367.

Molenaar, I. W.and Sijtsma, K. (2000) *User's manual MSP5 for windows: a program for Mokken scale analysis for polytomous items.* Groningen: ProGAMMA.

Sijtsma, K.and Van der Ark, L. A. (2003) 'Investigation and treatment of missing item scores in test and questionnaire data', *Multivariate Behavioral Research, 38*, 505-528.

Van Ginkel, J. R.and Van der Ark, L. A. (2007). SPSS syntax for two-way imputation of missing test data. Retrieved 13-9, 2007, from http://www.uvt.nl/faculteiten/fsw/organisatie/departementen/mto/software2.html

Van Schuur, W. H. (2003) 'Mokken scale analysis: between the Guttman scale and parametric item response theory', *Political Analysis, 11*, 139-163.

Van Schuur, W. H.and Kiers, H. A. L. (2004) 'Why factor analysis often is the incorrect model for analyzing bipolar concepts and what model to use instead', *Applied Psychological Measurement, 18*(2), 97-110.