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Residential Satisfaction in Housing Estates in European Cities: A Multi-level Research Approach

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ABSTRACT *This paper mainly focuses on the determinants of housing and estate satisfaction in post-Second World War housing estates. Multi-level linear regression models were applied to estimate the impacts of individual, dwelling and estate characteristics on resident satisfaction levels, using a unique dataset from 25 post-Second World War estates in nine European countries. It is concluded that satisfaction with the dwelling is higher for the elderly and residents with higher incomes, and in situations where the dwelling has been renovated and is sufficiently large. The presence of children and a longer duration of stay have negative impacts, and renters are generally more negative than owners. Estate satisfaction is highest among immigrant households or when the dwelling is renovated, and among lower educated inhabitants. Individual characteristics and opinions on the estate are more important than estate characteristics in explaining estate satisfaction. The overall conclusion is that attempts to improve post-Second World War areas may result in new areas, but does not necessarily improve the overall satisfaction.*

KEY WORDS: Satisfaction, post-Second World War housing estates, multi-level regression, Europe

Introduction

Segments of the scholarly housing literature have expressed negative opinions about living in large post-Second World War housing estates. These opinions started to develop shortly after these estates were built in many European countries, predominantly during the 1960s and 1970s (e.g. Prak & Priemus, 1985). Many authors claimed that large post-Second World War housing estates¹ were characterised by undesirable (or even inhumane) design, too much uniformity and too large a scale. They often referred to the lack of social control connected to the modernist buildings and to an absence of ‘eyes on the street’ (cf. Jacobs, 1961; Coleman, 1985), as well as to problems with ‘defending the space’

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(cf. Newman, 1970). These critics also referred to other issues related to safety and vandalism, problems with the quality of construction and with the peripheral locations of the estates, and problems with the management of the estates (Power, 1997). More recently, the spatial concentration of low-rent dwellings has been added to the list of serious problems (Norris, 2006). Many post-Second World War estates have been developed as public housing in which the state, the municipality or the housing association played a key role. This concentration of low-rent dwellings leads to a concentration of low-income households and this is seen as a root cause of many problems in these areas. This is illustrated by the fact that in countries such as the UK, Germany, France and the Netherlands, demolition programmes have been set up in order to demolish low-rent social rented dwellings and to replace them with more up-market alternatives, with the aim of breaking up spatial concentrations of low-income households and to arrive at a more mixed population in terms of income (Musterd, 2008; Van Beckhoven & Van Kempen, 2003). Of course, there might be other reasons for demolition, such as large numbers of vacancies, a deterioration in the state of the buildings and concrete, but these factors are hardly mentioned in the current policy discourse in European countries (Dekker & Van Kempen, 2004).

These worries and pessimistic feelings regarding the estates have also been fed by the fact that a significant share of housing has been allocated to households with low socio-economic status, such as people who are unemployed. Moreover, a large number of estates have seen significant inflows of minority ethnic groups. In some estates in the UK and Sweden approximately 60 per cent of the inhabitants are immigrant populations, and in some of the Dutch research areas approximately 80 per cent is of non-Dutch origin (Dekker & Van Kempen, 2004). The changing population composition has aggravated the image problem of the estates and has sometimes resulted in serious stigmatisation (see, for example, Atkinson & Jacobs, 2008; Dekker & Van Kempen, 2004; Murie *et al.*, 2003; Van Bergeijk *et al.*, 2008; Van Kempen & Dekker, 2009). The affordability, availability and allocation to households who were most in need of relatively inexpensive housing contributed to a decline of the position of many of these estates in their urban and regional housing markets. In turn, this produced an increase in turnover rates (those who could afford to move out did so; see, for example, Musterd & Van Kempen, 2007) and sometimes rapidly developing concentrations of relatively poor and low-skilled households, including a further increase in the unemployed, inhabitants with poorer health, and more families from ethnic minority groups.

From this negative perception of post-Second World War housing estates it could easily be concluded that the current residents in these estates will be extremely dissatisfied with their residential situation. However, that negative conclusion, although plausible, should not be drawn too quickly. Vale (1997), for example, found out that two-thirds of the population of large public housing projects in Boston did not want to leave the area, despite the fact that these estates were clearly generally regarded as relatively low quality. However, people seemed to accept the low quality, probably not because of the low rent they had to pay, but because they realised it was impossible to find something better elsewhere that fitted their incomes.

The aim of this paper is to find out which factors are important in explaining residential satisfaction in post-Second World War areas in European cities. The perspectives referred to above are characterised by at least three caveats and it is the aim of this paper to respond to these.

First, there is a strong focus on the negative appearance of the buildings; perceived negative housing characteristics at the level of the dwelling and estate (such as monotonous buildings) receive much attention (see Hastings & Dean, 2003; Rowlands *et al.*, 2009). This paper aims to find out which dwelling and estate characteristics in large housing estates have an effect on housing and estate satisfaction.

Second, a middle-class perspective often seems to be the ‘standard of measurement’. In other words, the concentration of inhabitants with a relatively moderate social position is almost automatically regarded as a problem because it deviates from the middle-class preference, and it is often overlooked that the estates may offer inhabitants a good life and opportunities, or a good starting point and a temporary place to live in before they are able to move to another place (Musterd & Van Kempen, 2007). The aim is to find out for which groups large estates fulfil a housing need.

Third, most studies, even recent ones, focus on housing satisfaction within the neighbourhood context of one country (Amérgo, 2002; Howley *et al.*, 2009; Li & Song, 2009). The paper aims to create insight into the impact of the neighbourhood context in different countries, in which the individuals are embedded. This is important because the urban design of these neighbourhoods may be similar, however, the experience of this design may be very different. In line with what Pickvance (2001) called a differentiating comparative analysis with plural causation, the focus is on the differences between contexts (estates) rather than on the similarities. The paper concentrates on the impact of individual and household characteristics and estate level variations (average experience of problems, average opinion on services, share of immigrants, share of owner occupiers, distance to the city centre). The strategy contrasts with existing approaches to satisfaction, which generally focus on individuals within the context of dissimilar estates in one country.

The main question of this paper is as follows: to what extent are the residents of post-Second World War estates in European cities satisfied with their dwelling and their estate, and what dimensions are most important for understanding the differences in satisfaction levels?

It is thought that opinions or satisfaction levels will differ due to differences amongst individuals and households and different contexts and places. The paper will focus on satisfaction with regard to the dwellings and estates, and it will attempt to try to increase the understanding of variations in satisfaction with the help of individual characteristics and dwelling- and estate-related variables. Survey data were used from 25 large housing estates in Sweden, France, the Netherlands, Germany, Poland, Hungary, Slovenia, Italy and Spain. Multi-level analysis will be applied in order to disentangle the individual and estate effects on satisfaction levels.

Subsequent sections begin by elaborating on a selection of the literature concerning residential satisfaction. There is then a brief description of the characteristics of the research areas. A short methodological section follows that addresses the data and concepts used. There will also be clarification about why multi-level regression models are required to estimate the impacts of the independent variables. The multivariate analyses are then presented, and the paper concludes with some considerations for further research.

Satisfaction and Dissatisfaction: Theoretical Backgrounds

Residential satisfaction is considered to be important for the functioning of the housing market since it is generally accepted that higher levels of satisfaction among residents are good for both the residents and for the landlords and owners of the dwellings and estates.

Satisfaction creates stability in the neighbourhood, because satisfaction is a significant predictor of immobility (Speare, 1974). Dissatisfied people may have a tendency to move out, especially when they know that opportunities are available and affordable (Feijten & Van Ham, 2009). Therefore, an understanding of the factors that result in satisfied residents 'can play a critical part in making successful housing policies' (Lu, 1999, p. 264). Satisfaction can be defined as a state in which a person's expectations are met. Satisfaction with a dwelling means that the tenant considers the accommodation large enough or feels that it has enough amenities. Satisfaction with the estate implies that the tenant likes the neighbours, the physical state of the area or the location relative to the city centre.

The main aim in this paper is to explain satisfaction with the dwelling and the estate, and to investigate the dimensions most important for understanding the differences in satisfaction levels. The literature tells us that there may be some very direct relationships between satisfaction, on the one hand, and individual and household characteristics, as well as dwelling and estate (or residential environment) characteristics on the other hand (see, for example, Amerigo & Aragones, 1997; Chapman & Lombard, 2006; Lu, 1999). These relationships are largely based on the expectations people have in their various life stages and the possibilities they have (or experience) on the housing market (Clark *et al.*, 2006, Feijten & Van Ham, 2009; Vale, 1997). Demographic and socio-economic position on the demand side have to fit certain characteristics of the dwellings and estates on the supply side, including maintenance. This holds for satisfaction with the estate as well as with the dwelling. Some of the literature explicitly states that there is a close association between housing satisfaction and estate satisfaction (Parkes *et al.*, 2002).

Demographic Factors

First, household composition can be an important variable (Adams & Gilder, 1976; Clark & Onaka, 1983, Clark *et al.*, 2006). Focusing on large housing estates, with their many apartments and high-rise complexes, it may be hypothesised that single and two-person households will be more positive about their dwelling and the estate than households with children would be. It might be expected that parents with children like living in a single-family house with a garden more than living somewhere above the ground. Play space availability for children and easy control by parents would be key variables that explain these differences. As early as 1952, Bauer had claimed (concerning the USA) that families with growing children 'do not belong' in apartments and prefer to live on the ground level. By the 1960s, criticism was already being aired in Denmark. Morville (1969) found a negative correlation between the time young children played outside and the height of their homes (quoted in Vestergaard, 2004). Apart from this household perspective on the impact of (not) having children and satisfaction levels, there is also a more general estate-related perspective. Brodsky *et al.* (1999) found that the presence of children had a negative effect on the tenants' identification with the estate. Their research was carried out in several poor estates that were not considered suitable environments for children. Others have found that children are an important intermediary in generating social interaction in an estate (see, for example, Campbell & Lee, 1992; Guest & Wierzbicki, 1999). More social ties and social interaction in turn leads to higher feelings of estate satisfaction (Amerigo & Arragones, 1997; Dekker & Bolt, 2005; Parkes *et al.*, 2002; Skifter Andersen, 2008).

The expectation that single and two-person households might be more positive about estate living can also be associated with the fact that this category of residents is frequently

more mobile and many will only stay in the estates temporarily; they see their current estate as a springboard for a further housing career (Musterd & Van Kempen, 2007). Because they are not firmly attached to the area, they also might not feel particularly negative (Campbell & Lee, 1992; see also Van Beckhoven & Van Kempen, 2003).

Household composition is usually associated with age. However, the explanatory value of age is difficult to assess. Musterd & Van Kempen (2007) found that for residents below the age of 40, compared to older residents, post-Second World War housing estates often function as a springboard for future housing rather than as a permanent place to stay. Older people have a higher probability of having lived there for a longer period of time. The effect of duration of stay on the level of satisfaction is theoretically unclear, but empirical evidence supports the assumption that older residents are more satisfied with their dwelling and estate than younger residents (Lu, 1999).

Socio-economic Factors

The socio-economic background of a household can also play a role. A low income can prevent a household from selecting a dwelling and place to live (Amerigo & Aragones, 1997; Clark & Dieleman, 1996; Deurloo *et al.*, 1994). A forced stay might lead to a negative attitude, but at the same time might lead to a process of cognitive dissonance reduction, resulting in a more positive attitude towards the current dwelling and estate. Low-income families might have a positive attitude towards a dwelling if the rent they pay is low enough. Having a higher income generally means that there are more possibilities to move to a better dwelling and estate. However, again this may go both ways (either acceptance of the present situation or negative attitudes). The impact of spending a large share of your income on housing can be positive ('I spend so much on this, I cannot tell myself that there is a negative aspect to this dwelling') or negative ('If I spend so much on my house, I expect a superb and excellent quality dwelling and I feel disappointed').

Lower-income groups also tend to have more friends, acquaintances and relatives in the estate than higher-income groups (see, for example, Dekker & Bolt, 2005; Lee & Campbell, 1999). This might result in greater satisfaction with the estate for those with lower incomes.

Among other factors, the level of income is associated with the labour market situation and with an individual's educational level. Highly-educated people usually have a wide network of activities and people, and their ties have a wider geographical range (Fischer, 1982). As a result, they often make little use of estate facilities: they are oriented towards the whole city or urban region for their activities and networks (Blokland-Potters, 2005; Guest & Wierzbicki, 1999). Professional status is associated with education. Groups such as the unemployed and disabled people are more restricted in their activity patterns and are therefore more limited to their area (Fischer, 1982; Guest & Wierzbicki, 1999). When more time is spent in the area, more negative attitudes may develop, especially in areas with many problems. However, restriction to the area may also lead to more positive opinions for the reasons mentioned above (having more social contacts).

Ethnicity

Immigrant groups are often associated with low incomes. However, an important question is whether being an immigrant (i.e. ethnicity) has an independent influence on housing and estate satisfaction. It might be expected that where people from the same immigrant group

are concentrated, individuals might find support from people of the same group living in the same estate or have more possibilities for contact (Flint & Rowlands, 2003), making life in the estate more agreeable and thus leading to more positive opinions. It is clear from the literature that recent immigrants who cannot speak the language of the country of settlement and immigrants with a low level of education have a higher propensity to focus on estates where many of their fellow-countrymen already live (Enchautegui, 1997; Fong & Gulia, 1999).

Tenure

The literature has established that homeowners are generally more positive about their dwellings and neighbourhoods than tenants. For example, Elsinga & Hoekstra (2005) found that homeowners in seven out of the eight countries they studied were more satisfied than tenants (see also Wilson *et al.*, 1995). A few reasons for this difference are well known. First, on average, in most cases homeowners have higher incomes than renters and thus have had more possibilities to choose their dwelling and estate (Deurloo *et al.*, 1994). Second, owned properties might be of a higher quality than rented dwellings. Third, homeowners are said to take more responsibility for their homes (Saunders, 1990), which would stimulate them to improve the quality of their homes if they have the means to do so. Finally, the simple fact that homeowners have put their own money into their homes may make them say that they are positive; it is never easy to admit that you are unsatisfied when you have put money into something. In short, there are various reasons to expect that homeowners express more satisfaction with their dwellings than tenants, including in large housing estates.²

Dwelling Factors

Of course, the characteristics of a dwelling itself are overwhelmingly important for evaluating one's housing situation (Baker, 2008; Clark & Onaka, 1983; Fuller, 1995). Negative opinions are formed when the housing does not fit the household's demands. Numerous authors stress the size of the dwelling as the most important determinant of housing satisfaction; residents of all tenures seek dwellings that adequately meet the space requirements of the household (Baker, 2008; see also Clark & Onaka, 1983; Rossi, 1980). When they do not have enough space (rooms, square metres available), dissatisfaction with the home results.

The quality of the dwelling is often reflected in the price of the dwelling: the lower the quality, the lower the rent or price on the owner-occupied market. The quality of the house (not the price), measured in objective or more subjective terms, has been seen by many authors as the main determinant of housing satisfaction, especially also among public tenants (Bird, 1976; Kintrea & Clapham, 1986). The presence of damp, for example, has been isolated as the greatest source of dissatisfaction among the elderly in Scotland (Wilson *et al.*, 1995). It has been indicated in many studies that refurbishing increases the satisfaction of the inhabitants (Baker & Arthurson, 2007; Fuller, 1995; Kintrea & Clapham, 1986; Lu, 1999).

Satisfaction with the estate hardly shows connections with tenure. This is probably because most renters and owner-occupiers seem to live in different social worlds (Arthurson, 2007; Atkinson & Kintrea, 1998, 2000; Hiscock, 2001; Jupp, 1999).

Estate Factors

Satisfaction with the estate will vary with the physical and social resources of the estate, as well as with the exposure to problems and also with available services, such as the presence of good quality public transport or local shops (Wilson *et al.*, 1995). A high prevalence of problems in the estate, such as dirt in the streets, drug-related problems, vandalism, criminality, traffic problems and others, correlates with negative attitudes and less satisfaction (Harris, 1999). Safety can be a particularly important source of dissatisfaction; feelings of being unsafe can generate a strong desire to move (Atkinson & Kintrea, 2000).

As Sampson (2009) indicates, the perception and evaluation of problems is mediated by perceptions of the social quality of the estate. Individuals that are rather satisfied with the (ethnic) population composition of the estate will experience lower levels of physical disorder. One of the most important sources of dissatisfaction on the estate level can be the composition of the estate population. In general, residents are more satisfied with their neighbourhood when the population is similar to their own characteristics and are less satisfied when the population shows different characteristics (Bobo & Zubrinsky, 1996; Clark, 1991, 1992; Feijten & Van Ham, 2009). Research in the United States in particular has indicated that whites tend to have a preference for white neighbourhoods and do not want to live in areas with a large number of blacks (Clark, 1992). According to Sampson & Raudenbusch (2004), race has become a statistical marker in the United States, imbued with meanings about crime and disorder (see also Crowder, 2000; Ellen, 2000).

However, there are also other types of results. Harris (2001) found out that the ethnic composition of the neighbourhood is not a very important factor in itself after controlling for socio-economic status, neighbourhood deterioration and the quality of schools (see also Van Bergeijk *et al.*, 2008).

It should be noted that average scores on neighbourhood quality and individual perceptions should not be regarded as having a similar influence on satisfaction. This also holds true for the level of service provision in and around the estate. The individual experience, rather than the actual presence, of services such as playgrounds, schools, green space, shops and other services is expected to have a positive impact on the levels of satisfaction (Gruber & Shelton, 1987).

The level of tenure mix is expected to be related to the occurrence of problems, and will thus influence satisfaction with the estate. As Kearns & Mason (2007) showed using data from the UK, the share of social renting and private renting is positively related to the number of serious problems cited (vandalism, crime, litter, graffiti, racial harassment, noise, traffic). It is expected that the share of social rented housing will be negatively related to the level of satisfaction.

Furthermore, it is expected that the location of the estate will influence satisfaction with the estate. On the one hand, if economic opportunities (employment) are further away (Boyle *et al.*, 1998) the residents of more remotely located estates may be less satisfied. The physical attractiveness of a more rural location, however, may generate greater levels of satisfaction because of the recreational opportunities (Barcus, 2004; Ploch & Cook, 1982; Williams & Jobes, 1990). Other studies did not find an impact of location (Kearns & Parkes, 2003). However, relative location has its influence on the level of satisfaction, although its bearing may be undecided.

Large Housing Estates in Europe

The 25 large housing estates in this research are strikingly similar with regard to their appearance: many middle- and high-rise blocks, their large and often green public areas, and the functional separation between housing and commercial sub-areas. Many estates were originally built for low- and medium-income families. The educational level of the inhabitants of the estates is generally low compared to other districts in the city, although there are some variations.

The estates in the sample vary in age. Many post-Second World War housing estates were built between 1950 and 1975. In Western and Northern Europe the period between 1965 and 1975 can be characterised as the high-rise era (Wassenberg *et al.*, 2004). Estates can be relatively young, especially in Southern and Eastern Europe, where many were built only two or three decades ago. In that period most Western and Northern European countries had already started to build different types of estates, often with more owner-occupied dwellings and more single-family houses.

Large housing estates in Southern as well as Eastern Europe are characterised by an over-representation of owner-occupation, while in Western Europe, the emphasis is on the social rented sector (Dekker & Van Kempen, 2005). For example, in the area of New Hoograven in Utrecht, The Netherlands, owner-occupied dwellings comprise only 6 per cent of the total stock in the area, and in Husby in Stockholm, Sweden, not even one dwelling is owner occupied. Areas such as Orcasitas in Madrid (92 per cent owner-occupied), Trinitat Nova in Barcelona (71 per cent), Havanna in Budapest (80 per cent) and Wrzeciono in Warsaw (61 per cent owner-occupied) show completely different pictures (Musterd & Van Kempen, 2005).

The separation of functions in many of the post-Second World War estates was the consequence of the clear ideas and design principles of architects and city planners about the feeling of spatial grandeur and the belief in the society that could be made through the creation and design of public space and buildings. With regard to the basic principles of the design of the estates, land uses were separated into residential, employment and transport (Turkington *et al.*, 2004). This resulted in a strict division between public and private space, and a separation of housing and service areas.

The architects usually planned a number of shopping centres, either small or large. In some cases the type of shops has changed: the original butchers, bakeries, groceries and small supermarkets were replaced by shops that served the needs of the current residents. Ethnic entrepreneurs have started their ethnic-specific businesses in estates with many immigrants. During the socialist period in Central and Eastern Europe, informal shops served the residents and compensated for the lack of formal shopping facilities until small private shops grew after 1990.

A general problem is the lack of good public services on many estates (Musterd & Van Kempen, 2005). The original provision of health services has not been updated, and GPs and dentists are often not replaced when they retire or move. In addition, there is often a lack of community centres that facilitate contact between different groups or provide a place for people to develop new capacities. When the estates were built, churches, schools and playgrounds would have been natural meeting places for the residents, but changing population compositions have raised the need for new community centres.

Many of the post-Second World War estates are still functioning well in their respective local and regional housing markets (Belmessous *et al.*, 2004; Hall *et al.*, 2005; Öresjö *et al.*, 2004; Plostajner, 2004). However, maintenance has been relatively poor in some estates,

where the quality of the houses leaves much to be desired due to a combination of cheap material and poor maintenance. Some estates, mostly in Eastern and Southern Europe, have leaking roofs, defects in water and sewage systems, defects in the heating systems, crumbling plasterwork, problems with heat insulation, unsafe balconies, and/or poor functioning of the lighting systems. Even when the quality of the buildings is relatively good, as in the Netherlands and Sweden, the grey concrete that was used is aesthetically unappealing (Aalbers *et al.*, 2004; Öresjö *et al.*, 2004).

Methodology, Data, Representativeness and Key Concepts

This paper focuses on residential satisfaction in post-Second World War housing estates. The empirical dataset is derived from a survey carried out on 25 estates in 14 cities in nine different European countries: France (Lyon), Germany (Berlin), Hungary (Budapest and Nyiregyháza), Italy (Milan), the Netherlands (Amsterdam and Utrecht), Poland (Warsaw), Slovenia (Ljubljana and Koper), Spain (Barcelona and Madrid), and Sweden (Jönköping and Stockholm). The survey was part of the EU RESTATE project (Musterd & Van Kempen, 2005). A similar survey was constructed for all 25 estates. For an in-depth analysis of the estates reference was made to the individual country reports (see Aalbers *et al.*, 2005; Andersson *et al.*, 2005; Belmessous *et al.*, 2005; Černič Mali *et al.*, 2005; Knorr-Siedow & Droste, 2005; Pareja Eastaway *et al.*, 2005; Tosics *et al.*, 2005; Van Beckhoven & van Kempen, 2005; Wećławowicz *et al.*, 2005; Zajczyk *et al.*, 2005).

The survey was carried out between February and June 2004. In each case, a random sample was drawn, usually from the whole estate. For some estates, address lists were used as the basis for the sample; in other cases, the researchers first had to take a complete inventory of addresses themselves (for some deviations from this general trend and for an overview of response rates, see Musterd & Van Kempen, 2005). In most cities, survey teams were hired to carry out the survey. They worked under the supervision of the RESTATE partners. Briefings were organised to instruct the survey teams. In some cases (for example, in Amsterdam and Utrecht), interviewers were recruited from specific ethnic groups in order to increase the response rate among, for example, the Turkish and Moroccan residents on the estates. In other cases, family members translated questions during a face-to-face interview. The interviewers with an immigrant background were hired in those estates where this made sense. In some estates it was not necessary to do this because the number of immigrants was (close to) zero (as in most cases in CE Europe). The questionnaire could be completed by the respondents themselves, but also by the interviewers in a face-to-face interview.

Data and Representativeness

The data file contains 4756 respondents. Nearly all respondents indicated their satisfaction with the dwelling and the estate. Originally, the data file also contained cases from the UK. However, UK respondents were excluded from the analyses because of doubts about the reliability of the answers to the ethnic minority questions. This left 25 estates in nine countries. In general, older people and original populations are somewhat over-represented, while younger people and immigrant populations are relatively under-represented,³ despite the fact that in estates with a large minority population surveyors were also employed from minority ethnic groups. For younger people, this

discrepancy probably derives from the extent of their activities outside the home, making them more difficult to reach. The under-representation of the immigrant population is presumably related to language and cultural differences. For more detailed information on the representation of population in each case, reference is made to the reports of the researchers in the different countries which can be downloaded from the programme website.⁴ All country reports indicate that despite these over- and under-representations, the survey results are valuable for the analyses of their own individual situation.

Methods

Data were collected for each estate. Multi-level linear regression analysis was applied to correct for the fact that the significance of the impact of estate level variables is measured with much fewer units of analysis, but also to be able to correct for the role of the estate. That is important if individual level variables tend to be strongly related to the estate. The tenure variable is a good example. Tenure appears to be very estate specific. Multi-level regression is then required to correct for these effects. The intra-class correlation of the multi-level model was tested to determine the proportion of variance at the neighborhood level. The intra-class correlation represents the proportion of the total variability in the outcome that is attributable to the estates. In models without explanatory variables, the intra-class correlations show that 9.36 per cent of the variation in satisfaction with the dwelling and 10.96 per cent of the variation in satisfaction with the estate is on the estate level.

The impact of missing answers and hence missing respondents was reduced in the analyses by excluding three independent variables that were not significant but had relatively large numbers of missing answers: housing type, floor and having a paid job. Excluding these non-significant independent variables from the multi-level models resulted in a now acceptable loss of respondents due to missing replies to certain answers (share of immigrants is 5 per cent lower, share of people who moved after 2002 is 4 per cent lower, share of social rent is 4 per cent lower, and owner-occupier is 5 per cent higher than in the original sample population).

For each dependent variable different models are estimated using the SPSS mixed models procedure with the maximum likelihood variant. Two levels of analysis are used: the individual level and the level of the estates. Satisfaction with the dwelling is first explained by individual and dwelling characteristics (model 1) and then satisfaction with the estate is also added (model 2). Satisfaction with the estate is first explained by individual and dwelling characteristics (model 1), then individual opinions on problems and service level in and around the estate are also included (model 2) and estate characteristics (model 3). Finally, satisfaction with the dwelling is also entered into the model (model 4).

Key Concepts

The dependent variables on satisfaction with regard to the dwelling and with regard to the estate are both measured on a 10-point scale: 'How satisfied are you with your home/neighbourhood? Please indicate on a scale between 1 (very low) and 10 (very high)'. Average satisfaction with the dwelling has a score of 6.93; the average satisfaction with the estate is 6.31 (significantly different from satisfaction with the dwelling, $p < 0.001$). There is a strong correlation between the two satisfaction scores: Pearson's R: 0.49 ($p < 0.001$).

Table 1. Indicators used to construct estate-level indicators of problems and service levels

Problem index indicators (mentioned as being problematic)	Service level index indicators (services within 10 min.)
Dirt on the streets	Grocery shop
Drug abuse	Bank
Burglary in dwellings	Post office
Burglary in cars	General practitioner
Graffiti	Public park
Feelings of being unsafe	Bus stop
Upkeep of public spaces	Primary school
Condition of the roads	Dentist
Playgrounds for children	
Maintenance of buildings	
Lack of employment	
Quality of schools	
Quality of commercial centres	
Quality of public services ^a	
Different values	
Racism	

Note: ^aBoth indexes refer to schools, commercial centres and public services. However, the problem index asks respondents about the perceived quality of these services whereas the service index measures if these services exist. The correlation between the two indexes is low, the two indexes measure different issues.

Thirteen different independent variables refer to personal and dwelling characteristics. In addition, a problem index variable has been constructed on the basis of 16 indicators (Table 1) with regard to perceived problems (yes or no) in and around the estate. Because several respondents did not answer all of the questions related to these indicators, the index was constructed as follows: for those respondents with scores on at least 12 of these indicators the percentage of problems experienced was calculated per respondent. The average score of all respondents per estate is regarded as an estate level variable; the individual score, measured as the deviation from the estate average, is taken as an individual level variable. A comparable index is constructed with regard to the service provision. Eight indicators were used (Table 1) and individuals had to have scores on at least six of these to be included. Some additional estate level variables have also been used: the percentage of immigrants in the estate; the percentage of owner-occupiers; and the distance of the estate from the city centre. Table 2 shows the descriptions for the variables we used in the analyses.

Table 2. Descriptions of dependent and independent variables

Variable	Mean	sd	n
<i>Dependent variables</i>			
Satisfaction with the dwelling	7.04	2.19	3877
Satisfaction with the estate	6.36	2.35	3861
<i>Individual level independent variables</i>			
	<i>Mean</i>	<i>sd</i>	<i>n</i>
Age	47.32	17.01	3880
Individual opinion on problems in and around the estate ^a	0.00	21.26	3380
Individual opinion on services in and around the estate ^a	0.00	14.65	3871
<i>Individual level independent variables (categorical)</i>			
	<i>%</i>		<i>n</i>
Sex: female	58.5		3929
Children: yes	48.7		3893

Table 2. Continued

Variable	Mean	sd	n
Ethnicity: immigrant	22.4		3805
Income: average or high	57.8		3631
Education: more than 12 years	34.2		3831
Moved to dwelling: after 2000	22.1		3891
Percentage of income spent on house: more than 30	57.8		3499
Tenure: social rent	35.5		3836
Tenure: private rent	20.8		3836
Tenure: owner occupied	43.7		3836
Size: more than 60 m ²	59.8		3593
Condition dwelling: renovated	51.1		3665
<i>Estate level independent variables</i>	<i>Mean</i>	<i>sd</i>	<i>n</i>
Average opinion on problems in and around the estate ^b	35.96	9.72	25
Average opinion on services in and around the estate ^b	86.04	6.43	25
Percentage immigrants	26.88	27.93	25
Percentage owner occupiers	47.44	32.95	25
Distance of the estate to the city centre (km)	6.84	4.00	25

Notes: Figures presented refer to the entire sample excluding the UK: 3941 respondents in 25 estates.

^a deviation from average score of all respondents in the estate.

^b average per estate.

Empirical Analyses

The following text is organised as a sequence of analyses, first focusing on satisfaction with the dwelling as the dependent variable, followed by a series of analyses that aimed to understand satisfaction with the estate. All results presented of the analyses are outcomes of multi-level linear regression models.

Table 3 shows the estimates of the B-coefficients and the associated levels of significance of the variables used in efforts to understand variations in satisfaction with the dwelling. As in normal regression, the significance of the variables is based on the t-statistic: a higher t-value indicates a more pronounced significant effect. T-tests provide a conservative estimate and a good protection against type I errors (Hox, 2002). Two models are presented, one focusing purely on individual level independent variables (model 1), and one in which the satisfaction with the estate is included as an explanation (model 2). According to model 1, the 12 variables explain just 8.64 per cent of the variance in the satisfaction with the dwelling. Nevertheless there are significant relationships between some of the explaining variables. The most important impacts (with highest t-values) come from the age of the respondent ($t = 5.5$) and from the size of the dwelling ($t = 5.7$). Older respondents are more satisfied than younger ones; this supports findings by Lu (1999). Higher satisfaction scores coincide with larger dwellings, which is as expected. A significant effect also relates to whether there are children in the household. Having children is associated with less satisfaction. This supports part of the literature, but it does not support those who say that children facilitate social interaction and through that route contribute to satisfaction. Income is also significantly related to satisfaction with the dwelling (higher-income households are more satisfied with the dwelling than lower-income households). However, households in the estates who spend a large percentage (more than 30 per cent)

Table 3. Satisfaction with the dwelling, explained by individual and dwelling characteristics (model 1) and by satisfaction with the estate (model 2)

Variable	Estimates (b)	
	Model 1	Model 2
Intercept	6.211**	4.062**
Age	0.015**	0.011**
Female versus male	0.097	0.077
Children vs. no children	-0.264**	-0.239**
Immigrants vs. original population	-0.174	-0.267*
Average or high income vs. low income	0.275**	0.217**
More than 12 years of education vs. less than 13 years	-0.220*	-0.106
Moved to the dwelling after 2000 vs. settled before	0.425**	0.386**
Percentage of income spent on house above 30 vs. lower	-0.290**	-0.255**
Social rent vs. owner-occupied	-0.459**	-0.324**
Private rent vs. owner-occupied	-0.298	-0.350*
Size more than 60 m ² vs. less	0.538**	0.510**
Renovated dwelling vs. not renovated	0.370**	0.294**
Satisfaction with the estate		0.374**
Percentage explained variance	8.64	25.78
- 2 Log Likelihood	11236**	10739 ^a

Notes: All models were run with 2645 respondents in 25 estates; all respondents who have non-missing scores on all variables used. * $p < 0.05$; ** $p < 0.01$

^aModel 2 is significantly better than model 1 with $p < 0.01$

of their income on housing are less satisfied with the dwelling than households who spend a lower percentage of their income on housing. The lower satisfaction rates of households who spend a substantial part of their income may be explained by the higher expectations: if a person spends a substantial amount on something, they are likely to attach more importance to it, and want to be satisfied with the purchase.

The estimates for tenure categories reveal that after controlling for other impacts, owner-occupiers tend to be more satisfied with their dwellings than social renters, but have similar degrees of satisfaction as private renters. Those who settled in the dwelling only relatively recently are more satisfied than those with a longer duration of stay. Finally, dwellings that have been renovated significantly correlate with higher satisfaction levels.

Model 2 reveals that the satisfaction with the dwelling is strongly associated with satisfaction with the estate; the explained variance increases to 25.78 per cent and the t-value is by far the highest (23.4). According to the term $-2 \log$ likelihood the model has a significant better fit than model 1. This confirms other research findings (Parkes *et al.*, 2002). Of course, there is a theoretical logic in this, but it should be considered that this effect may also reflect the potential spurious correlation between these two satisfaction variables.

It should be noted that most variables with significant relationships with dwelling satisfaction in model 1 also show significance in model 2. However, when satisfaction with the estate is also included, immigrants turn out to be less satisfied with their dwelling than non-immigrants. Perhaps the slightly lower satisfaction rates are due to the different housing needs of immigrants from the non-immigrants (such as the need for a closed kitchen, or a separate room for men and women).

Private renters are also less satisfied with their dwelling than owner-occupiers if satisfaction with the estate is taken into consideration. Their satisfaction with the dwelling

is thus more related to satisfaction with the estate, and less to the dwelling itself. Moreover, respondents of all educational levels are equally satisfied with their dwelling if satisfaction with the estate is taken into consideration. This implies that part of the dissatisfaction with the dwelling, measured in model 1, is due to dissatisfaction with the estate for highly-educated respondents.

In Table 4 the attention shifts to satisfaction with the estates. Here, the study distinguishes between four models: model 1 refers to the role of individual and dwelling characteristics in explaining variance in estate satisfaction; model 2 includes individual opinions about the problems and service level in and around the estates; model 3 also takes a number of estate characteristics into account; and model 4 is expanded with the

Table 4. Satisfaction with the estate, explained by individual and dwelling characteristics (model 1), and individual opinions on problems and service level in and around the estate (model 2), and estate characteristics (model 3), and satisfaction with the dwelling (model 4)

Variable	Estimates (b)			
	Model 1	Model 2	Model 3	Model 4
Intercept	5.884**	6.067**	8.007**	5.244*
Age	0.010**	0.005	0.005	0.000
Female versus male	-0.010	0.122	0.120	0.067
Children vs. no children	-0.047	-0.008	-0.017	0.061
Immigrant vs. original population	0.365*	0.206	0.246	0.344**
Average or high income vs. low income	0.126	0.021	0.034	-0.054
More than 12 years of education vs. less than 13 years	-0.329**	-0.365**	-0.350**	-0.257**
Moved to the dwelling after 2000 vs. settled before	0.058	-0.048	-0.053	-0.169
Percentage of income spent on house above 30 vs. lower	-0.072	0.028	0.037	0.110
Social rent vs. owner-occupied	-0.370**	-0.270*	-0.222	-0.074
Private rent vs. owner-occupied	0.143	0.107	0.150	0.258
Size more than 60 m ² vs. less	0.073	0.027	0.048	-0.162
Renovated dwelling vs. not renovated	0.232*	0.282**	0.284**	0.105
Individual opinion on problems in and around the estate		-0.036**	-0.036**	-0.028**
Individual opinion on services in and around the estate		0.012**	0.012**	0.009**
Average opinion on problems in and around the estate			-0.040*	-0.027
Average opinion on services in and around the estate			-0.006	-0.005
Percentage immigrants			-0.006	-0.009
Percentage owner occupiers			0.007	0.004
Distance of the estate to the city centre (km)			-0.033	-0.020
Satisfaction with the dwelling				0.375**
Percentage explained variance	2.21	13.25	17.19	28.29
-2 Log Likelihood	10534**	10223 ^a	10212 ^b	9902 ^c

Notes: All models were run with 2364 respondents in 25 estates; all respondents who have non-missing scores on all variables used. * $p < 0.05$; ** $p < 0.01$

^a Model 2 is significantly better than model 1 with $p < 0.01$

^b Model 3 is significantly better than model 2 with $p < 0.05$

^c Model 4 is significantly better than model 3 with $p < 0.01$

satisfaction with the dwelling. According to the term $-2 \log$ likelihood all more complicated models show a significant better fit than the previous ones, although the difference between the models 2 and 3 only just reaches significance at the 5 per cent level.

As shown in model 1, the individual and dwelling characteristics do not play a major role in understanding estate satisfaction variance; the percentage of explained variance is very low. However, five variables are significantly related to the satisfaction levels. Age seems to be the most important variable (highest t-value: 3.0). Older residents are more satisfied with the estate than younger residents. Remarkably, immigrants, who tend to be less satisfied with the dwelling compared to non-immigrants, are more satisfied with the estate after controlling for the other variables. Estate satisfaction also rises when the dwelling has been renovated. In this model, as in other models regarding estates, it is also found that the educational level relates negatively to the level of satisfaction: more highly-educated residents are significantly less satisfied with the estate than less-educated residents. This seems to reflect the cultural position of the residents more than the socio-economic position since there is no significant relationship between estate satisfaction and income.

Model 2 shows what happens when individual opinions with regard to problems and services in and around the estate (corrected for the average score per estate) are added to the explanation. The explanatory power increases sharply, and the impact of both new variables appears to be highly significant. The t-values show that individual opinions about problems in and around the estate have by far the highest impact ($t = -17.3$). A higher level of problems results in less satisfaction with the estate. It is interesting to find that the impact of individual opinions on services in and around the estate is significant but much less important ($t = 3.8$). Model 2 has also been calculated with the average opinions on problems and services in and around the estate as variables instead of the individual opinions on problems and services in and around the estate (analyses not shown). When applying that model, the explained variance only increases to 2.8 per cent. It is therefore clear that the individual perception of the problems and services is much more important than the 'real' problems and service levels, as indicated by the average opinions of the respondents. Higher levels of services lead to higher levels of satisfaction. The level of education and the state of the dwelling (renovated or not) remain significant factors, but age and ethnicity lose their significance.

In model 3, five estate variables were added to the individual variables in model 2. The percentage of explained variance in estate satisfaction increases from 13.25 to 17.19, which indicates that these estate variables play a modest role in explaining estate satisfaction. In addition, when the variation on the estate level not accounted for by the individual variables of model 2 is examined, the five estate variables explain 36.04 per cent of that residual variation. A more detailed assessment shows that only one estate factor has significant impact in addition to the individual level variables: the average opinion on problems in and around the estate. The average opinion on the service levels in and around the estate has no significant impact, nor has the share of immigrants, the percentage of owner-occupiers, and the distance to the city centre.

Finally, in model 4 the satisfaction with the dwelling was also included on top of all the other variables in model 3. The share of explained variance rises, which indicates that a large share of the variation in satisfaction with the estate is explained by satisfaction with the dwelling. Clearly this variable contributes significantly to the explained variance ($t = 18.2$). It must be noted that the impact of the individual opinions on problems also remains important and significant ($t = -13.8$) to explain estate satisfaction. It is

interesting to note that individuals in a renovated dwelling are similarly satisfied with their estate as those in non-renovated dwellings, when satisfaction with the dwelling is taken into account. Satisfaction with the neighbourhood is probably influenced by satisfaction with the dwelling, which is higher for residents in a renovated dwelling. Interestingly, immigrants are more positive about their estate than the original population once the satisfaction with the dwelling is taken into consideration. A reverse pattern was found in Table 3, when accounting for satisfaction with the dwelling.

Conclusions and Considerations

The first aim of the paper was to find out which characteristics of the dwellings in large housing estates are perceived positively. It was found that large dwellings that have been renovated and are owned by the occupants are evaluated most positively. This is in line with what others have found in country-specific studies (Baker, 2008; Clark & Onaka, 1983; Deurloo *et al.*, 1994; Wilson *et al.*, 1995). Clearly, space and quality of housing (as owner-occupied housing tends to be of higher quality) is a positive asset for all people. It was also found that the characteristics of the dwelling do not influence satisfaction with the estate.

The second aim of the paper was to find out for which groups large estates fulfil a housing need. It was argued that these estates might be problematic places to live for everyone, or alternatively play a positively valued role for particular groups. Existing literature was partly supported by the finding that households with children are less satisfied with the dwelling in the (mainly) high-rise housing estates focused upon in this research compared to households without children (see Adams & Gilder, 1976; Clark & Onaka, 1983). However, older residents show higher levels of satisfaction (in line with Lu, 1999). There was uncertainty about the impact of income, which could be either positive or negative. It was found that residents with higher incomes are more satisfied. This is probably because they can afford to live in better dwellings in these estates, and could move out if they were dissatisfied. The fact that they still live there is because they are still satisfied with the situation as it is. Lower-income households do not have the choice to move out, and also usually live in the less attractive dwellings of the estates, which causes lower satisfaction. In addition, it was also found that households who spend a large part of their income on housing tend to be less satisfied, maybe because their expectations are higher, while their income is lower.

Estate satisfaction was higher for immigrants, the low or medium educated and those who perceived few problems in and around the estate. Clearly, these estates fulfil an important housing need for some groups. One very important conclusion from this research becomes clear when the determinants of housing satisfaction are compared with estate satisfaction: immigrants and low-educated people tend to be rather satisfied with the estate, but dissatisfied with their dwelling. On the other hand, the original population, highly-educated people, and average or high-income residents tend to be rather satisfied with their dwelling, but not satisfied with the estate. This points to the direction of segregation within these estates, whereby the most vulnerable groups occupy the worst quality housing within the area, and the households with more chances stay in the estate because they can live in a decent quality home for relatively little money without caring too much about the type of estate they live in.

The third aim was to form insight into the impact of the neighbourhood context in different countries, in which the individuals are embedded. It was expected that although

the urban design of these estates is similar, the experience of this design might be very different due to the different social and cultural contexts. Surprisingly, estate level variables such as the share of owner-occupiers, the share of immigrants and distance to the city centre did not appear to be important factors in explaining estate satisfaction. The international comparison thus showed that the Western European tendency to blame the ethnic minorities and tenants for the problems in post-Second World War estates is not true: people throughout Europe are satisfied with a large affordable dwelling in an area without too many problems. However, no relation whatsoever could be found with the share of immigrants in the estate, or with the share of rented dwellings. This is an important finding because it indicates that regeneration policies should not focus on changing the population composition by demolishing the social rented housing stock and pushing out immigrant groups. Rather, the focus should be on providing decent quality housing for low-income immigrant households within the same estates.

It was found that subjective perceptions of 16 problems are an important indicator of estate satisfaction. This is a good and powerful variable, but it would be even better if more objective data on these topics were available, comparable to the systematic social observation of public spaces as proposed by Sampson & Raudenbusch (1999). Unfortunately, such data are hard to obtain for 25 estates throughout Europe. Another way to gain more insight into the exact reasoning why low income and immigrant households are dissatisfied with the home but satisfied with the estate, and for the non-immigrant high-income households to be satisfied with the home but dissatisfied with the estate, would be to study a few households more closely. It would be interesting to know why the latter households stay. However, such a qualitative approach would yield very valuable insights, but lack the scale to generalise findings. This study covers post-Second World War estates throughout Europe, which allows comparison between similar dwellings in similar estates in dissimilar contexts. Findings can be generalised to other post-Second World War estates in Europe. Of course, the cross-sectional design has some drawbacks: it is not possible to establish cause and effect, change cannot be measured, and it is static and time bound. More longitudinal research would be helpful to discover whether the dwelling or the estate is a more important indicator of satisfaction, and how this develops over time.

The findings should be interpreted with some care, since satisfaction was measured as a one-dimensional concept. The analysis was based on two questions, asking respondents to indicate their satisfaction with their dwelling and estate with a figure for each. It is not totally clear what the respondents referred to when they assessed their satisfaction. Did they include the wider estate, or just part of it? Did they include only their own apartment or also the semi-public area in the building block? Future research could aim at more in-depth questioning about the broader spectrum of the concept of satisfaction.

This paper began by referring to the negative opinions on large housing estates (e.g. Jacobs, 1961; Newman, 1970; Power, 1997). It was argued that negative images of these estates would result in serious stigmatisation and a further decline of the position on the housing market. Affordability of the housing stock would result in concentrations of low-income households and ethnic minorities in these estates. However, the results have shown that these estates are not unsatisfactory places to live, at least, definitely not for all people living there. On average, satisfaction with the dwelling is 'above sufficient' and satisfaction with the estate is 'sufficient'. Perhaps it is time to conclude that at least part of the post-Second World War estates are actually rather nice places to live.

Notes

- ¹ Following Anne Power (1997), the study defined a large housing estate as a group of buildings that is recognised as a distinct and discrete geographical area, planned by the state or with state support. Large housing estates have at least 2000 housing units.
- ² This does not automatically mean that selling a dwelling to a sitting tenant immediately leads to more satisfaction. There is large amount of literature that shows that instruments such as the UK's Right to Buy have led to numerous problems: some of the new owners cannot afford to maintain their dwelling properly, resulting in decay and a low satisfaction with their housing situation (e.g. Forrest & Murie, 1990; Meusen & Van Kempen, 1995).
- ³ In each country a detailed report is available with information on the survey method (section 3.1), on over- and under-representation of groups among the respondents (section 3.2) and conclusions on representativeness (section 3.4). These reports are available online at <http://www.restate.geog.uu.nl/results/Opinions.html>
- ⁴ Available online at <http://www.restate.geog.uu.nl/results/Opinions.html>

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