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## Some years of communities that care

Jonkman, H.B.

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# Part II: RESEARCH

## *Solution*

I am  
stubborn  
and in this stubbornness I give  
as wax  
so only I can  
print the world'

Tadeusz Różewicz

In contrast to individual phenomena like intelligence and depression, the measurement of social phenomena and constructs like social economic status or social capital is in its infancy, and the situation is even worse for ecological constructs like communities, schools, and workplaces. In the second part of this study, the importance of the scientific research of problem behaviour in specific areas (communities, cities, countries) will be discussed in three chapters. Although the aim of the Communities that Care prevention system is to prevent adolescent behavioural health problems, in each chapter of this second part specific problem behaviours of youngsters (in this case antisocial behaviour, alcohol use) are analysed within specific contexts: communities, cities, and countries. On the basis of ecological research, the situation in specific areas can be assessed. Ecological ('ecometric') research aims to use the needs of youngsters as a point of departure for social investment. Characteristics of this research, in my study, are the development of children and youngsters over a longer time span, the four contexts in which young people grow up (family, school, friends, and community), and social determinants (risk and protective factors).

In the second part of this thesis, three examples are presented. Chapter 5 is a metropolitan study on anti-social behaviour, Chapter 6 is a non-Western study on violence and delinquency, and Chapter 7 is a comparative study between two countries on alcohol use of youngsters. These chapters show how such ecological research on specific adolescent behavioural health problems can be set up and worked out and can contribute to the organisation of social policy and improvement of health and the social development of youngsters.

# 5. TARGETED PREVENTION OF ANTI- SOCIAL BEHAVIOR IN AN URBAN CONTEXT

Harrie Jonkman, Hans Boutellier, Pim Cuijpers, Petra van der Looy and Jos Twisk.

In: Crime Prevention and Community Safety, 2009.

# ABSTRACT

**P**reventive interventions for reducing anti-social behavior in youngsters are generally set in urban contexts. This article contains basic proposals about where to begin with preventive activities (areas with high prevalence), which underlying factors to target (risk factors) and what gains these interventions may yield (attributable fractions). This is a cross-sectional study of anti-social behavior among 5,657 youngsters (12-15 years) who live in 55 neighborhoods within eleven boroughs in Rotterdam (the Netherlands). The prevalence of anti-social behavior, the risk factors and attributable fractions are analyzed on three levels (neighborhood, borough and city). This article addresses ways to tackle anti-social behavior effectively through social crime prevention. We focus on specific problem areas, identify the risk factors associated with that area and put together a package of preventive policies and interventions aimed at addressing these.

# INTRODUCTION

We cannot predict which children and youngsters will grow up into anti-social adults. Perhaps we never will (Hoeve et al., 2008). At the same time children and youngsters who exhibit anti-social behavior are too numerous to all be helped with existing resources. There are long waiting lists for the treatment of children and youngsters with anti-social problems in many countries. Many of them don't get the help they deserve. Furthermore, anti-social children and youngsters and their families are often difficult to reach. Reaching out to them is a time-consuming and energy-demanding enterprise. Even when treatment is possible and they agree to participate, it is often not completed in the way it should be. Although the number of effective preventive programs is increasing, only a limited number of youngsters can make use of them (Jonkman et al., 2008, Offord & Bennett, 2002). Clearly therefore, there is sufficient reason to explore prevention of anti-social behavior as an alternative to individual treatment. New preventive insights and approaches are worth taking seriously.

Anti-social behavior of youngsters we define here as disruptive or rule breaking behavior which shows itself in violence and other forms of delinquency (punishable acts) of youngsters.<sup>1</sup> The development and early detection of anti-social behavior has received considerable scientific attention in recent years. Research has revealed an association between the prevalence of anti-social behavior and development of anti-social behavior on one hand and specific factors (especially risk factors) on the other hand. In etiological and epidemiological research important risk factors which are connected with the early onset and development of anti-social behavior have been discovered (Loeber & Farrington, 1997, 2001; Loeber et al., 2008; Junger-Tas et al., 2008). These risk factors may play a role in the early detection but also in the prevention of problem behavior.

In recent years there has been renewed attention to the influence of the environments on anti-social behavior. These environments are generally also the contexts in which preventive activities should be undertaken. The influence of the characteristics of the city, boroughs and neighborhoods on the development of social and anti-social behavior has a long scientific history (Shaw & Mc Kay, 1942; Cloward & Ohlin, 1960). The theme of the neighborhood returned to the centre of interest with the work of Wilson (1987), and renewed research on the relationship between individual factors and contextual factors was conducted (Wilson, 1987; Jencks & Mayer, 1990;

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<sup>1</sup> *Editor's note: in the Dutch context, anti-social behaviour is thus defined very differently from in the UK*

Sampson, 1992; Leventhal & Brooks-Gunn, 2000; Elliot et al., 1992; Furstenberg, 1999). It became clear that the neighborhood plays an important role in social and normative support and the development of behavior (Sampson et al., 1997; Sampson & Laub, 1993; Thornby & Krohn, 2003; Kawachi & Berkman, 2003).

The relationship between the characteristics of a neighborhood and anti-social behavior of youngsters is both direct and indirect. Existing delinquency in the neighborhood, like crime, hooliganism and drug abuse affects anti-social behavior of youngsters in a direct way (Junger-Tas, et al, 2008). Poverty, socio-economic deprivation and lack of bonding with the neighborhood are important contextual factors for anti-social behavior and other health differences (Kawachi & Berkman, 2003).

It is indirect if unfavorable living conditions undermine the quality of upbringing, and parents feel powerless to manage or structure the lives of their children by rules and control (Pels, 2003; Furstenberg, 1999). Youngsters who live in these circumstances come to see crime as a normal phenomenon and anti-social behavior as an attractive lifestyle (Felson, 1998). Law-abiding residents who live in these neighborhoods may move, social control decreases, parents might think they are unable to do their job as parents, and youngsters will spend more time on the street and have more scope for causing trouble.

Big cities (metropolitan areas) show more violence, juvenile delinquency and other kinds of risk behaviors (like school drop-out and teen pregnancy) than in smaller cities. Research indicates repeatedly that youngsters from certain neighborhoods of these metropolitan areas demonstrate more problem behavior than youngsters in other neighborhoods. Anti-social behavior concentrates itself often within certain neighborhoods in these bigger cities. Children and youngsters who live here exhibit more behavioral problems, show more violence and have more contacts with the police.

When not all anti-social problems can be solved on the individual level and the importance of contextual factors are evident, what does this mean for urban social policy and prevention strategies? A lot of work is done in cities but often without clear theoretical and empirical knowledge. City councils often ask themselves where they should put social investment, which interventions give the best preventive chances and what are the gains they yield? City councils repeatedly ask for insights to help them focus on main social problems (like anti-social behavior). They ask also how we select policy priorities and improve our insights into the benefits of social investment? Scientific support to choose areas where the problems are most prevalent and support them in choosing effective interventions can help. Underlying factors (especially risk factors and protective factors) offer good prospects for targeted social investment and successful preventive policy. Sound research into prevalence and underlying risk factors can be the basis for rational and effective prevention strategies. Our knowledge of

social investment is still limited but we can support urban areas to handle social problems more effectively. This article deals with these government questions and how we can build up targeted prevention and choose for a more selective approach. That is the reason we asked ourselves in this article the question: where to begin, what to target, what to expect?

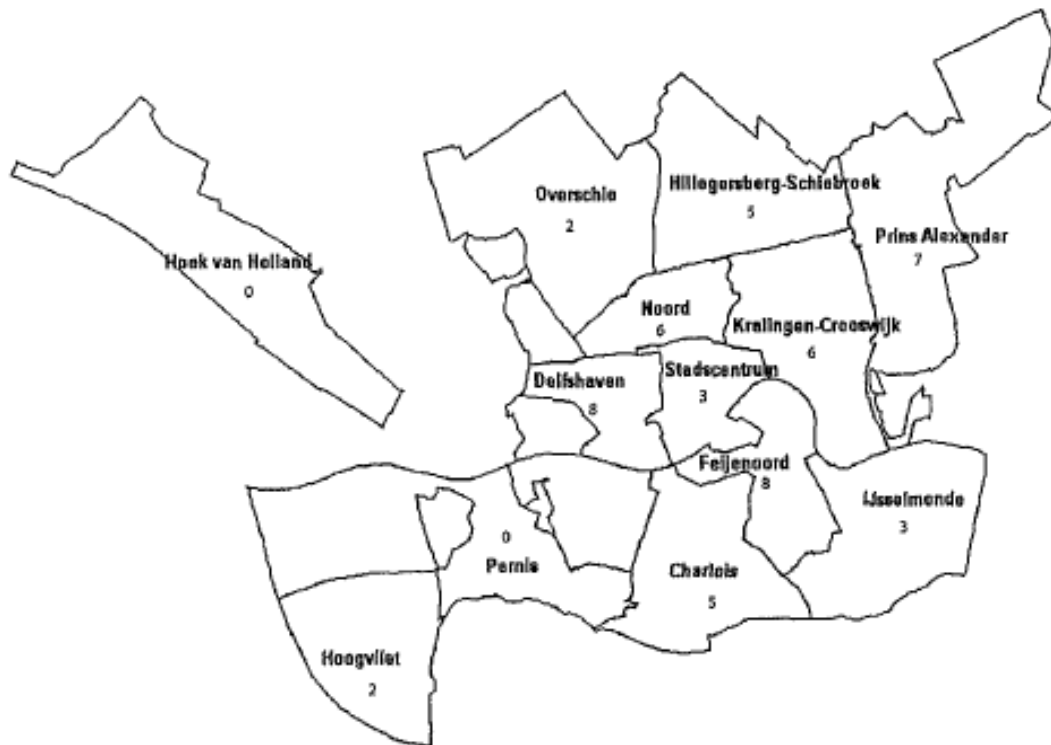


# METHODS

## SAMPLE

The data used in this article are based on a study which was conducted during the 2006-2007 school year in 90% of secondary schools in the city of Rotterdam (DSP, GGD and NJI, 2007).

**Figure 1.** Rotterdam, the boroughs and number of neighbourhoods researched



One Islamic school, one Protestant and special schools of vocational education ('Praktijkscholen' for youngsters with learning disabilities) didn't participate. The response of the youngsters in the participating schools was also 90%. The survey was set out only to first and third graders. In the year of data gathering (school year 2006-2007) Rotterdam had a total of 26,176 youngsters aged 12 to 15 years. The questionnaire was filled in by

8,915 school-goers in 50 secondary schools. However, 2,534 of them lived outside Rotterdam and 352 filled in an invalid code number, so these were removed from the data file. Also youngsters from other age brackets (younger than 12, older than 15, total 372) were taken out. Finally, we had a dataset of 5,657 individuals. These are clustered within 55 neighborhoods (based on postal code, Table 1. ). The neighborhoods are clustered within eleven boroughs (with their own semi-autonomous administration). The survey excluded two boroughs, which are part of Rotterdam: the borough Pernis (an industrial area almost without youngsters) and Hoek van Holland.

**Table 1.** *The 55 neighborhoods and 11 boroughs*

Hoogvliet Zuid (HVZ)	Vreewijk (VW)	Provenierswijk (PW)
Hoogvliet Noord (HVN)	Nesselland (NE)	Oude Noorden (ON)
HOOGVLIET (HV-DG)	Kop van Zuid (KZ)	Liskwartier (LK)
	Katendrecht (KD)	Blijdorp (BD)
Zuidwijk (ZW)	Hillesluis (HS)	Bergpolder (BP)
Tarwewijk (TW)	Feyenoord (FN)	Agniessebuurt (AB)
Pendrecht (PD)	Bloemhof (BH)	NOORD (N-DG)
Oud Charlois (OCL)	Afrikaanderwijk (AW)	
Carnisse (CN)	FEYENOORD (FN-DG)	Overschie (OS)
CHARLOIS (CL-DG)		Kleinpolder (KP)
	Rubroek (RB)	OVERSCHIE ( OS-DG)
Zevenkamp (ZK)	Oud Crooswijk (OC)	
's-Gravenland (GL)	Nieuw Crooswijk (NC)	Tussendijken (TD)
Prinsenland (PL)	Kralingen West (KLW)	Spangen (SP)
Oosterflank (OF)	Kralingen Oost (KLO)	Schiemond (SM)
Ommoord (OM)	De Esch (DE)	Oud Matthesse (OM)
Nessellande (NL)	KRALINGEN (KL-DG)	Nieuw Westen (NW)
Lage Land (LL)		Middelland (ML)
PR. ALEXANDER (PA-DG)	Terbregge (TB)	Delfshaven (DH)
	Schiebroek (SB)	Bospolder (BP)
Lombardijen (LD)	Molenaarskwartier (MK)	DELFSHAVEN (DH-DG)
Gr IJsselmonde (GIJM)	Hillegersberg Noord (HBN)	
Beverwaard (BW)	Hillegersberg Zuid (HBZ)	Stadsdriehoek (SD)
IJSSELMONDE (IJM-DG)	HILLEGERSBERG (HB-DG)	Oude Westen (OW)
		Cool (CL)
		STADSCENTRUM (SC-DG)

## MEASUREMENT

The questionnaire was conducted via internet among secondary school-goers in the first (12-13 years) and third (14-15 years) grade. The research instrument used for this research was adapted from the Communities that Care Youth survey (Arthur et al, 2006). The adaptation sought to retain semantic meaning of items and the resulting country specific questionnaire showed similar psychometric properties to the original USA survey instrument (Jonkman et al., 2006). The results give an overview of the youngsters' background (e.g, gender, age, ethnicity, school background), various problem behaviors (including anti social behaviour but also other behaviors like alcohol- and drug use) and risk factors in the family, school, friends and neighborhood. The data gathering took place with support of school nurses from the Municipal Health Service (GGD) of Rotterdam (Aalst & Roorda, 2007, 2008).

Risk factors can be seen as approximations of causes of, in this case, anti social behavior. They are part of the domains in which youngsters grow up daily: family, school, friends and communities. In this article we use only the factors which demonstrated high reliability (Cronbach's alpha .70 or higher). These five risk factors are expected to be related to a higher level of anti social behavior.

For this article we concentrated on socio-demographic variables and risk factors as independent variables and anti-social behavior as the dependent variable.

For the independent variables we used four socio-demographic variables: gender, age (12/13 years-14/ 15 years), school type (high/academic-low/vocational) and ethnicity (Dutch-other). We used five risk factors which are researched on a four-point scale (YES, yes, no, NO).

1. Poor family management: This was assessed with the following statements: The rules in our family are clear; when I'm not at home, my parents know where I am; within our family there are clear rules about alcohol and drug use; if I use drugs, my parents will notice this; if I play truant, my parents will notice this (5 items, Cronbach's alpha =.0,75)

2. Family conflict: This was assessed with the following statements: within our family we often shout or snarl at each other; within our family there is always the same battle about the same things; in our family there is often a big argument (3 items, alpha=.76).

3. Attitudes favorable towards alcohol and drug use: Questions here are: What do you think if someone of

your age is drunk; uses soft drugs (like marijuana, hash), hard drugs (like heroin, cocaine, XTC), other drugs (like valium, glue, pado's), smokes (5 items,  $\alpha=.77$ ).

4. Interaction with anti-social peers: Questions here are: Do your friends play truant? Do your friends carry a weapon? Do they steal? Have your friends ever been arrested by the police? Did your friends leave school without a certificate? (5 items,  $\alpha=.77$ ).

5. Low neighborhood attachment: This was assessed with the following statements: I would like to move out of this neighborhood; if I had to move I would miss this neighborhood very much; in my opinion I live in a nice neighborhood (3 items,  $\alpha=.85$ ).

For reasons regarding content we also made the risk factors binary. This meant we could later analyze the Attributable Fraction, a measure by which we can say something about the benefits of social investment. For the risk factors we used the median as cut-off point (like Arthur et al. (2006), who compare different cut-off point strategies and defends the median strategy). Youngsters who scored lower on a risk factor got a 0. Youngsters who scored higher got a 1 on this risk factor.

Dependent variable: Anti-social behavior. To examine anti-social behavior we asked six questions (regarding violent and delinquent acts during the past year): 1. Did you sometimes carry a weapon to school? 2. Did you participate in a fight? 3. Did you hit anyone? 4. Did you destroy anything on the street? 5. Did you steal anything? 6. Did you sell stolen goods? Youngster got a 1 when they answered one or more questions in the affirmative. Their score was 0 when they answered no to all of the items.

Other (dependent) variables: For this article we also looked at other adolescent problem behaviors and made use of measures of substance abuse (alcohol use, smoking, all types of hash use). We asked the participants if they drank, smoked or used hash during last month.

## STATISTICAL ANALYSES

Statistical analyses (with the use of STATA 11.1 and MLWin 2.20) were conducted in two parts:

1. First, the prevalence of anti-social behavior for Rotterdam was mapped out. In addition, we researched the correlations with other problem behaviors (alcohol, cigarettes, hash). We also looked at the level of prevalence of anti-social behavior within the eleven boroughs and 55 neighborhoods of Rotterdam.

For this part we performed logistic multilevel analysis on the total Rotterdam dataset. Logistic multilevel analysis handles a dichotomous outcome variable (here anti-social behavior yes/no). It is a logistic regression analysis. But because the data in this study are clearly clustered in neighborhoods and boroughs we have to correct for this. Over the last ten to fifteen years new research methods have been developed which can handle these clustered and hierarchical data more accurately. The differences in overall level of the dependent variable may vary for different clusters controlled for covariates (random intercept model). But the differences can also be studied when the effects of the covariates differ over the clusters (random coefficient model). The youngsters are nested within 55 neighborhoods and these neighborhoods are nested within the eleven boroughs of the city.

We put the different variables in one prognostic model. The correlations between anti-social behavior on the one hand and socio-demographic background variables and risk factors on the other hand were determined in this part of the study within the clustered context. We started with a two-level intercept model (a three-level model was not necessary). We first added the socio-demographic variables (the first group of predictors) to the model and then the second group of predictors (risk factors). On the basis of logistic multilevel analyses we were then able to build up a prognostic model with socio-demographic as well as risk factors with a strong predictive power on which targeted prevention in this urban context can be built.

2. With the support of our prognostic model we examine in the second part of this article the possibilities of targeted prevention in this urban context. Many cities set themselves a target of lowering levels of problem behaviors. In this part of the article we asked ourselves what should happen for a western metropolitan city like Rotterdam to lower the prevalence of anti-social behavior from 0.33 to 0.30. With this target in our mind, should prevention be conducted in specific neighborhoods, in specific boroughs or should this preventive work be done city-wide? To answer this question we first identified high-prevalence neighborhoods and boroughs where the level of anti social behavior is higher than the 'target-mean' of 0.30. We identified eleven neighborhoods and seven boroughs with a significant high level of anti-social behavior.

After identifying these environments we tested our predictive model in each high-prevalence environment. On the basis of this predictive model we selected for every environment the strongest adjusted risk factor for that area and looked at how strong the association with anti-social behavior was for that area. But we looked not only at how strong this relation was. We converted also which profits can be made in neighborhoods, boroughs and the city as a whole, assuming that prevention policy is so successful that the negative influence of the highest risk factor can be reduced completely in each of these environments. So, after we have determined the prevalence of anti-social behavior and selected the most important risk factor for every environment we calculated the (population) Attributable Fractions (AF) for the eleven neighborhoods, seven boroughs and for the city as a whole (Jewell, 2004; Smit, 2006). With these measures (prevalence, odds ratio, attributable fraction) we worked out the different possibilities for risk-oriented prevention of anti-social behavior in this urban context.

# RESULTS

## PREVALENCE OF ANTI-SOCIAL BEHAVIOR AND A PREDICTIVE MODEL

First, we analyzed the data for the whole city of Rotterdam and build up first our predictive model for targeted prevention of anti-social behavior among youngsters. Anti-social behavior was found in 33% of the Rotterdam youngsters (0.33; CI 95% 0.32-0.34). These anti-social youngsters also exhibit other risk behaviors: they drink more (OR drink 1.99; CI 95% : 1.75-2.26), smoke more (OR smoke: 2.14; CI 95%: 1.44-2.41) and use more hash (OR hash: 2.14; CI 95%: 1.50-3.05).

**Table 2.** *Multilevel models*

Model 1a:		Model 2:	
Random intercept neighborhood		Random intercept neighborhood and borough (three level model)	
Intercept	-0.677 (0.042)	-0.688 (0.055)	
Variance			
Neigh	0.050 (0.019)	0.022 (0.01)	
Borough		0.032 (0.021)	
Model 1b: Random intercept borough			
Intercept	-0.692 (0.057)		
Variance			
Borough	0.047 (0.021)		
Model 3a:		Model 4a :	
Random intercept neighborhood and first group of predictors (social demographic variables)		Random intercept neighborhood and two groups of predictors (social demographic variables and risk factors)	
		Odds	
Intercept	-1.765 (0.077)	-2.890 (0.109)	

Fixed part			
Gender	1.001 (0.059)	1.030 (0.065)	2.80 (2.67-2.93)
Age	0.081 (0.027)	-0.070 (0.030)	0.93 (0.87-0.99)
School type	0.678 (0.003)	0.577 (0.068)	1.97 (1.84-2.1)
Poor Family Management		0.573 (0.066)	1.77 (1.64-1.90)
Fam Conflict		0.247 (0.068)	1.28 (1.15-1.41)
Positive attitudes alcohol/drugs		0.444 (0.066)	1.56 (1.43-1.69)
Interaction with anti-social peers		0.526 (0.074)	1.69 (1.54-1.84)
Low neighborhood attachment		1.350 (0.074)	3.86 (3.71-4.01)
Variance			
Neighb	0.026 (0.014)	0.025 (0.015)	
Model 3b:		Model 4b :	
Random intercept borough and first group of predictors (social demographic variables)		Random intercept borough and two groups of predictors (social demographic variables and risk factors)	Odds
Intercept	-1.777 (0.079)	-2.905 (0.111)	
Fixed part			
Gender	0.999 (0.060)	1.030 (0.065)	2.80 (2.67-2.93)
Age	0.080 (0.027)	-0.070 (0.030)	0.93 (0.87-0.99)
School type	0.679 (0.063)	0.579 (0.068)	1.97 (1.84-2.1)
Poor Family Management		0.573 (0.066)	1.77 (1.64-1.90)
Fam Conflict		0.248 (0.068)	1.28 (1.15-1.41)
Positive attitudes alcohol/drugs		0.446 (0.066)	1.56 (1.43-1.69)
Interaction with anti-social peers		0.527 (0.074)	1.69 (1.54-1.84)
Low neighborhood attachment		1.348 (0.074)	3.86 (3.71-4.01)
Variance			
Neighb	0.014 (0.010)	0.015 (0.011)	

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Multilevel analysis (Table 2) gives us the opportunity to study the association of outcomes and independent variables and to build up a predictive model in a clustered structure. We researched the variance on neighborhood level (Model 1a) and borough level (Model 1b). We also tried out a three-level model (Model 2), but this three-level structure was superfluous because the significance of variances slips away between the two levels.

After the first step we further worked out the two-level models. We moved forward the first group of predictors (socio-demographic predictors: gender, age, school type) to the model (Model 3a and Model 3b). The influence of these variables on the outcome (anti-social behavior) is significant. In the last model (Model 4a and Model 4b) we add also the second group of predictors (five risk factors: Poor Family Management, Family Conflict, Positive attitudes towards alcohol and drugs, Interaction with anti-social peers, Low neighborhood interactions). The results on neighborhood and borough level are the same.



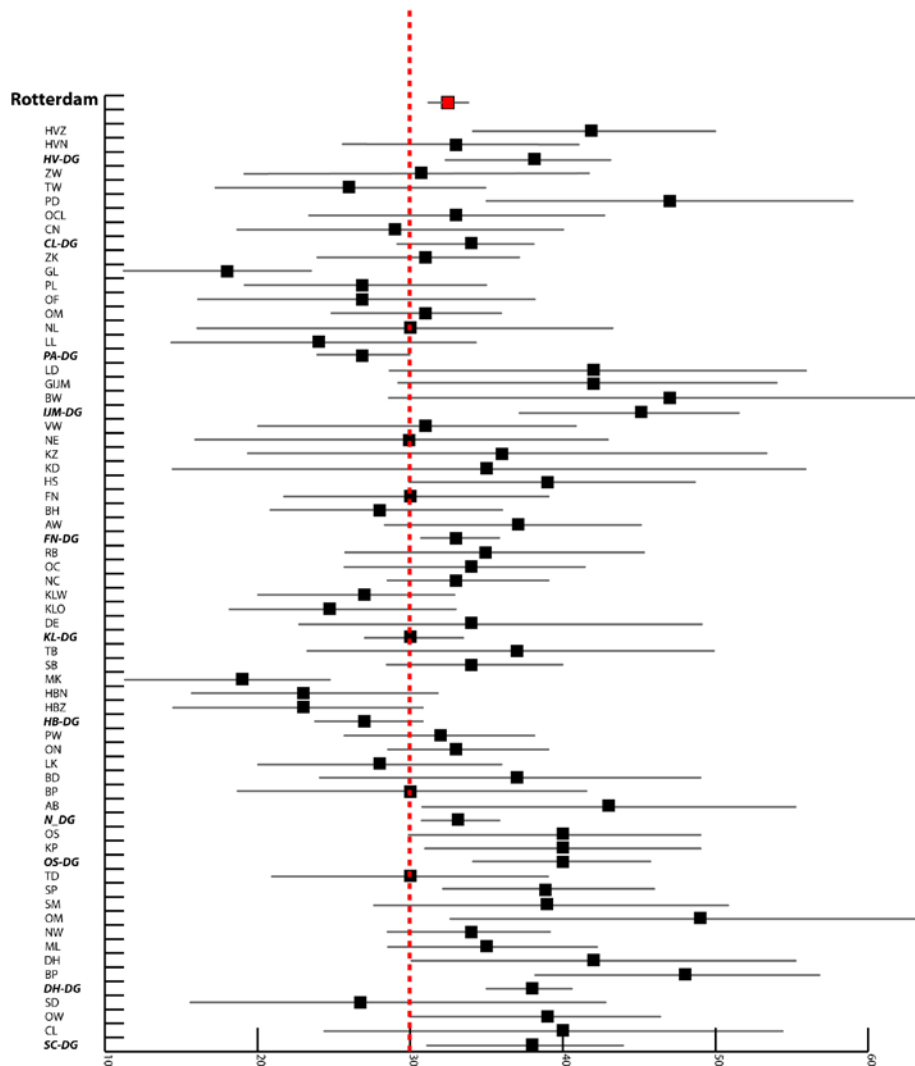
This predictive model shows that there is more anti-social behavior among boys than among girls (OR Gender: 2.8). Youngsters with a lower level of secondary education show more anti-social behavior than youngsters with a higher level of education (OR school type: 1.97). Younger adolescents exhibit more anti-social behavior than older adolescents (OR Age: 0.93). Gender, school type (high-low) and age (12/13-14/15) are significant socio-demographic variables.

The five risk factors which we used in this study were all significantly associated with anti-social behavior. Youngsters who grow up with these risk factors show more anti-social behavior than youngsters without these risk factors. Youngsters from families with poor family management engage in more anti-social behavior (OR Poor Family Management: 1.77). The same is true for youngsters with conflicts in the family (OR Family Conflict: 1.28), for youngsters who show favorable attitudes towards alcohol and drug use (OR Positive attitudes towards alcohol and drugs use: 1.56) and for youngsters who interact with anti-social peers (OR Interactions with anti-social peers: 1.69). The community risk factor is the risk factor with the highest impact in this urban context (OR Low neighborhood attachment: 3.86).

Almost all variance in anti-social behavior between neighborhoods and boroughs is explained by the model. The influence of the predictors is substantial and ultimately we don't need a hierarchical model for prediction. When youngsters are female, older and in a higher level of school and when they have none of the five risk factors the probability that they will exhibit anti-social behavior is 3.7%. The probability of engaging in anti-social behavior is high when they are male, younger and in lower types of education but also grow up with the five risk factors in their family, peer group and neighborhood. The probability that they will engage in anti-social behavior is then 88.6%.

# POSSIBILITIES OF TARGETED PREVENTION

Figure 2. Prevalence of anti-social behavior in Rotterdam, eleven boroughs and 55 neighborhoods (CI: 95%)



With the use of theoretical and empirical knowledge we could develop our predictive model. But we are not only interested in associations between outcomes and predictors and in one universal model. We want to explore possibilities and possible results for targeted urban prevention policy which takes into account the differences between environments. To explore this further we suppose that the municipal authorities of Rotterdam want to decrease the prevalence of anti-social behavior (as cities do often bravely). In this case the authorities set a specific target and want to lower the prevalence of anti-social behavior from 0.33 to 0.30. After building up our predictive model we tried to answer our three central questions: in which area should we begin; which risk factors should we target in our preventive work; and what gains can be yielded?

First, we selected areas with high levels of anti-social behavior. When we compare anti-social behavior among youngsters in different neighborhoods with the target prevalence of the city (0.30), we see that this problem behavior is significantly higher in eleven Rotterdam neighborhoods (see Figure 2, page X). These neighborhoods are: Oude Westen, Bospolder, Delfshaven, Oud-Mathenesse, Spangen, Kleinpolder, Overschie, Agniesebuurt, Hillesluis, Pendrecht, Hoogvliet-Zuid. Without any anti-social behavior in these neighborhoods, anti-social behavior city-wide would be lowered by 8.5% (24.5% = new total). Of the eleven boroughs seven score significantly higher than the target mean (0.30): Stadscentrum, Delfshaven, Overschie, Noord, Feyenoord; IJsselmonde and Hoogvliet. The added value of these boroughs to anti-social behavior among youngsters in Rotterdam is 20.3% (12.7% = new total).

After identifying the high-prevalence environments we tried out our model as described in the first part of this article in each of these environments. For each environment we searched for the risk factor with the strongest correlation with anti-social behavior for that area controlled for the other predictors. For these eighteen areas (eleven neighborhoods, seven boroughs) we also looked for the (population) Attributable Fraction. The Attributable Fraction gives us additional information for social policy. Suppose a systematic approach is taken to reduce the risk factor with the highest level in a specific environment and suppose this intervention is completely successful. The results (Table 3) show that ten of the eleven high-prevalence neighborhoods and all of the seven high-prevalence boroughs reflect substantial possible health gains. Only for the neighborhood Kleinpolder, where anti-social behavior among youngsters is significantly high in relation to the city mean, could such a significant risk factor and Attributable Fraction not be found.

Low neighborhood attachment, as we have seen, is overall the strongest correlated risk factor for anti-social behavior in Rotterdam. For seven of the eleven high level neighborhoods this is also the most important risk factor. If, for example, people in the neighborhood of Spangen are completely successful in reducing this risk factor, the level of anti-social behavior will be reduced here by 44%. In the Hillesluis neighborhood a reduction of this risk factor will yield the best results: 54%.

In three of the eleven neighborhoods we detected other important risk factors. Interaction with anti-social peers is the highest risk factor in Agniesebuurt (AF = 72%) and Pendrecht (AF = 73%). In the Overschie neighborhood Positive attitudes toward alcohol and drugs is high. Successful prevention work on this specific risk factor could reduce anti-social behavior by a maximum of 50%.

For all of the seven boroughs Low neighborhood attachment is the most important risk factor, ranging from an AF of 23% for Noord to 41% in Delfshaven.

**Table 3.** Selected areas and the influence of risk factor on anti social behavior

<i>Area</i>	<i>N</i>	<i>Anti social Behavior</i>	<i>Risk factors</i>	<i>OR</i>	<i>AF</i>	<i>Antisocial Behavior potential</i>
<i>11 Neighborhoods</i>						
<i>Oude Westen</i>	<i>140</i>	<i>0.39</i>	<i>Low neighborhood attachment</i>	<i>7.9</i>	<i>42%</i>	<i>0.23</i>
<i>Bospolder</i>	<i>101</i>	<i>0.48</i>	<i>Low neighborhood attachment</i>	<i>4.7</i>	<i>41%</i>	<i>0.29</i>
<i>Delfshaven</i>	<i>59</i>	<i>0.42</i>	<i>Low neighborhood attachment</i>	<i>5</i>	<i>32%</i>	<i>0.22</i>
<i>Oud-Mathenesse</i>	<i>37</i>	<i>0.49</i>	<i>Low neighborhood attachment</i>	<i>5.3</i>	<i>41%</i>	<i>0.29</i>
<i>Spangen</i>	<i>181</i>	<i>0.39</i>	<i>Low neighborhood attachment</i>	<i>9.7</i>	<i>44%</i>	<i>0.22</i>
<i>Kleinpolder</i>	<i>117</i>	<i>0.40</i>	<i>Ns</i>			
<i>Overschie</i>	<i>96</i>	<i>0.40</i>	<i>Positive attitudes towards alcohol and drugs</i>	<i>4.3</i>	<i>50%</i>	<i>0.2</i>
<i>Agniesebuurt</i>	<i>65</i>	<i>0.43</i>	<i>Interaction with anti social peers</i>	<i>5.1</i>	<i>72%</i>	<i>0.12</i>
<i>Hillesluis</i>	<i>118</i>	<i>0.39</i>	<i>Low neighborhood attachment</i>	<i>11.4</i>	<i>54%</i>	<i>0.18</i>
<i>Pendrecht</i>	<i>74</i>	<i>0.47</i>	<i>Interaction with anti social peers</i>	<i>8.6</i>	<i>73%</i>	<i>0.13</i>
<i>Hoogvliet Zuid</i>	<i>162</i>	<i>0.42</i>	<i>Low neighborhood attachment</i>	<i>4.2</i>	<i>38%</i>	<i>0.26</i>
<i>7 Boroughs</i>						
<i>Stadscentrum</i>	<i>209</i>	<i>0.38</i>	<i>Low neighborhood attachment</i>	<i>6.2</i>	<i>40%</i>	<i>0.23</i>
<i>Delfshaven</i>	<i>975</i>	<i>0.38</i>	<i>Low neighborhood attachment</i>	<i>6.4</i>	<i>41%</i>	<i>0.22</i>
<i>Overschie</i>	<i>228</i>	<i>0.40</i>	<i>Low neighborhood attachment</i>	<i>4.0</i>	<i>31%</i>	<i>0.28</i>
<i>Noord</i>	<i>613</i>	<i>0.33</i>	<i>Low neighborhood attachment</i>	<i>3.4</i>	<i>23%</i>	<i>0.28</i>
<i>Ijsselmonde</i>	<i>164</i>	<i>0.45</i>	<i>Low neighborhood attachment</i>	<i>3.3</i>	<i>25%</i>	<i>0.34</i>
<i>Feyenoord</i>	<i>636</i>	<i>0.33</i>	<i>Low neighborhood attachment</i>	<i>5.6</i>	<i>36%</i>	<i>0.21</i>
<i>Hoogvliet</i>	<i>318</i>	<i>0.38</i>	<i>Low neighborhood attachment</i>	<i>4.5</i>	<i>37%</i>	<i>0.20</i>

<i>City-wide</i>						
Rotterdam	5657	0.33	<i>Low neighborhood attachment</i>	3.5	36%	0.21
Rotterdam	5657	0.33	<i>Interaction with anti social peers</i>	1.23	13%	0.29
Rotterdam	5657	0.33	<i>Parental attitudes favorable towards alcohol and drug use</i>	1.44	17%	0.27
Rotterdam	5657	0.33	<i>Family conflict</i>	1.26	13%	0.29
Rotterdam	5657	0.33	<i>Poor family management</i>	1.38	17%	0.27

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But what does it mean for the prevalence of anti-social behavior in Rotterdam if targeted prevention is successful? Targeting specific risk factors in the eleven high scoring neighborhoods (Low neighborhood attachment in Oude Westen, Bospolder, Delfshaven, Oud Mathenesse, Spangen, Hillesluis, and Hoogvliet-Zuid; Interaction with anti-social friends in Agniesebuurt and Pendrecht; Positive attitudes towards alcohol and drugs in Overschie) can decrease the prevalence of anti-social behavior of the whole city from 33% to 29.4%. If the highest risk factor can be successfully reduced in the seven boroughs anti-social behavior by youngsters in Rotterdam should decrease by nearly 9% (prevalence of anti-social behavior potential: 24.1%). Although perhaps utopian, successful city-wide prevention policy is also imaginable: all the youngsters of Rotterdam are targeted and a specific risk factor is reduced in all areas. Anti-social behavior among youngsters can be potentially reduced from 33% to 21% if Low neighborhood attachment (AF=36%) is successfully targeted city-wide.

# CONCLUSION

## 1. DISCUSSION

Anti-social behavior is a social problem in many cities. It is impractical to address it merely reactively. Preventive strategies have more potential but they should be targeted. This research addresses the extent to which youngsters engage in anti-social behavior in the urban context of Rotterdam. In this research we make also use of variables of which previous scientific research showed are associated with this anti-social behavior (risk factors). These risks are part of their daily live. We found the influence of Low neighborhood attachment to be particularly high in this metropolitan area. In this article we built up a predictive model which may form the basis for preventive work on anti-social behavior.

But there are also area differences in cities in the extent of anti-social behavior and the risk factors most closely linked to it, as our findings in Rotterdam also show. Using the predictive model of the first part of this article we explored the possibilities of social policy in this urban context in the second part. We set a target (as cities often do), in our case to lower anti-social behavior by three percent city-wide. First, we detected high-prevalent environments (eleven of the 55 neighborhoods and seven of the eleven boroughs) where the level of anti-social behavior is significantly higher than the 'target-mean'. For each of these areas we selected a risk factor (the highest risk factor associated with anti-social behavior for that area in terms of Odds Ratio) and worked out the population Attributable Fraction (a good measure for expressing potential health gains). This Attributable Fraction expresses the maximum possible benefit when the preventive intervention has maximum success in pushing back the most important risk factor for this area.

Successful targeted prevention in high prevalent neighborhoods can lower the level of anti-social behavior in Rotterdam by a maximum of 3.6%. By eliminating the highest risk factor (Low neighborhood attachment) in the high prevalent boroughs, anti-social behavior of youngsters (12-15 years) could be decreased with 9% in this metropolitan city at most. If the most important risk factor (again Low neighborhood attachment) is targeted city-wide anti-social behavior could decrease by 12% (from 33% to 21%).

To tackle anti-social behavior effectively it is good to focus on specific problem areas, identify most closely risk factors associated with that area and to put a package of preventive policies and interventions together to address this. The package of effective preventive policies and interventions should be different for the different environments. Also their possible results will be different. Scientists can and should support city councils with selecting areas, with defining associated variables, defining realistic results and building up rational preventive policy. We (government, scientists and practitioners) should think more clearly and systematically about how the development of youngster can be improved and act accordingly.

## **2. LIMITATIONS**

Clearly, some aspects of this study need further elaboration. In relation to the instrument, we point out that the Netherlands has a number of reliable diagnostic instruments for clinical problems and backgrounds (such as intelligence and depression). But there is a lack of sound social diagnostic instruments for an aggregated level (like schools, neighborhoods and cities). In the Netherlands there are youth monitor reports and census statistics for youngsters. These instruments describe the size of the problems, but they provide no direction for intervention strategies. Our approach goes further. Our research strategy supplies policymakers and people in practice with information on the prevalence of problems (like anti-social behavior) but also with information on the underlying factors for the problems (in this case risk factors).

This study is limited to a youth sub-population (12-15 years). Youngsters of 16 and 17 years are not included in the study. In many studies conducted in various countries, the age crime curve is described. The development of delinquency over the years develops as a U-curve. The prevalence during early adolescence is low, increases quickly halfway through adolescence and decreases during late adolescence. This study is limited to younger adolescents and the development of anti-social behavior cannot therefore be described in its entirety. In future studies we will devote attention to this issue and broaden the sample to include youngsters from 12 to 18 years, fully encompassing the period from leaving primary school to the beginning of adulthood.

## **3. POLICY RECOMMENDATIONS**

This research provides a more sophisticated method for targeting crime-prevention in an urban context. The method applied here in the second largest city of the Netherlands, can be adapted to other communities as well. It is also hoped that significant variation across communities may be detected and that most of the variance can be explained by the risk model used here. Cities need these insights for successful urban policy.

With the introduction of measures through which health gains can be mapped out, we sketch a rather optimistic picture of social intervention policies. A complete wiping out of the risk factors in neighborhoods, boroughs and city-wide should not be seen as realistic. But these measures and calculations give policymakers and practitioners at least some handles for the decision making process and targeted strategies. Potential outcomes provide politicians and professionals with a number of insights for a knowledge-based and realistic urban policy. In the coming years Dutch youth policy will become more and more decentralized. The municipalities need perspectives for action, and methods for legitimizing their social policies, especially urban prevention policy.

Of course, this research has its limitations because it has been conducted in one urban context only, the metropolitan context of Rotterdam. In the future the research projects will be generalized to other environments and to medium-sized cities and rural areas. We will also investigate whether Rotterdam is representative of Dutch metropolitan areas.

In this article we concentrated on choices, chances and possible outcomes from knowledge-based preventive interventions; we explored possibilities of risk orientated prevention and gave arguments for a targeted preventive strategy.

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