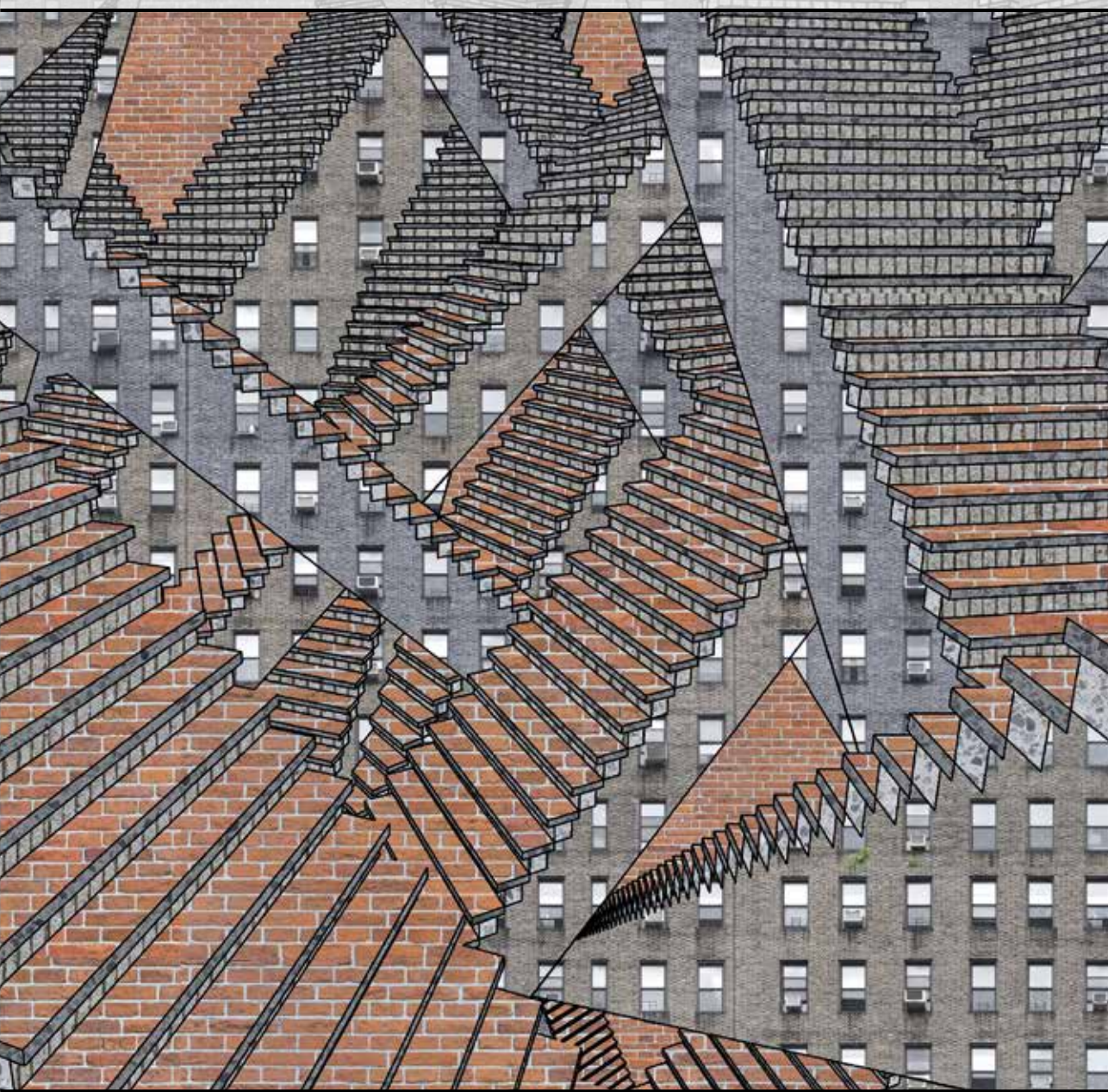
On the Way Up?

Exploring homelessness and stable housing among homeless people in the Netherlands



Barbara van Straaten

On the Way Up?

Exploring homelessness and stable housing among homeless people in the Netherlands

Barbara van Straaten

Promotiecommissie

Promotoren
Prof.dr. H. van de Mheen
Prof.dr. J.R.L.M. Wolf

Overige leden
Prof.dr. C.L. Mulder
Prof.dr. D.J. Korf
Prof.dr. G.B.M. Engbersen

Copromotoren
Dr. G. Rodenburg
Dr. S.N. Boersma

On the Way Up?

Exploring homelessness and stable housing
among homeless people in the Netherlands

Uit het dal?

Onderzoek naar dakloosheid en stabiele huisvesting
bij dakloze mensen in Nederland

Proefschrift

ter verkrijging van de graad van doctor aan de
Erasmus Universiteit Rotterdam
op gezag van de rector magnificus
Prof.dr. H.A.P. Pols
en volgens besluit van het College voor Promoties.

De openbare verdediging zal plaatsvinden op
woensdag 5 oktober 2016 om 15.30 uur

door

Barbara van Straaten
geboren te Rotterdam

Erasmus University Rotterdam

On the Way Up?
Exploring homelessness and stable housing among homeless people in the Netherlands
(IVO reeks 75)
Barbara van Straaten

ISBN 978 90 74234 94 8

Financial support for the research presented in this thesis was provided by
the Ministry of Health, Welfare and Sport.

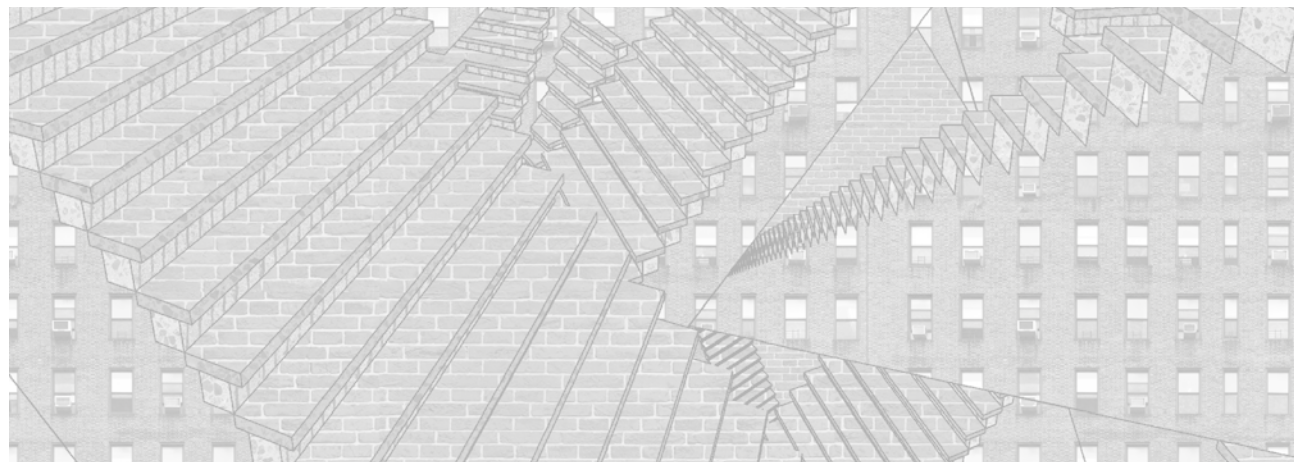
Financial support for the printing of this thesis was provided by the J.E. Jurriaanse Stichting.

Cover illustration: Jan van Nuenen

Content

chapter 1

General introduction



General introduction

To tackle homelessness, in 2006 the Dutch government adopted a new policy: the Strategy Plan for Social Relief (Dutch Government and four major cities, 2006). This policy plan aimed to ameliorate the situation of homeless people, as well as to 'clean the streets' and to curb public nuisance (Hermans, 2012). It was implemented in the four major cities in the Netherlands, i.e. Amsterdam, Rotterdam, The Hague and Utrecht, in two phases: phase 1 (2006-2009) focused on getting homeless people off the streets and phase 2 (2010-2013) focused on prevention of homelessness and rehabilitation. The objectives for individual homeless people were to provide them with an income, structural forms of living accommodation, evidence-based care programmes, and (as far as possible) a form of employment, by offering them an individual programme plan. In the individual programme plan, the individual's situation was defined, as well as the aims to be reached, the appropriate services with regard to the individual to be deployed, and by whom (Dutch Government and four major cities, 2006). During phase 2 of the Strategy Plan for Social Relief, the Ministry of Health, Welfare and Sport of the Netherlands requested and supported a cohort study among homeless people who were accepted for an individual programme plan. This cohort study on homeless people - called CODA-G4 - is an observational longitudinal multi-site cohort study which followed over 500 homeless people in Amsterdam, Rotterdam, The Hague and Utrecht (i.e. the 'G4') for a period of 2.5 years, starting in 2011.

This thesis is based on CODA-G4 data and focuses on: a) factors related to homelessness (substance use, intellectual disability and care needs) and their development over time; b) predictors of stable housing; and c) changes in indicators of social exclusion and the association between changes in indicators of social exclusion and psychological distress.

This introductory chapter starts by elaborating on homelessness in general (§1.1). Factors related to homelessness that are addressed in this thesis are described in §1.2, and the concept of stable housing is introduced in §1.3. Social exclusion is covered in §1.4 and this is followed by the aim and research questions of this thesis (§1.5). General information on the cohort study CODA-G4 is given in §1.6 and, finally, an outline of this thesis is presented in §1.7.

1.1 Homelessness

1.1.1 Definition of homelessness

Defining homelessness is not as straightforward as it may seem, and the definition of homelessness often varies between countries and/or institutions. The European Typology of Homelessness and Housing Exclusion (ETHOS) provides a broad definition of homelessness and discerns four conceptual categories of homelessness: i) rooflessness (people living rough, in a night shelter), ii) houselessness (shelter accommodation, supported accommodation for formerly homeless people), iii) insecure housing (temporarily with family/friends, living under threat of violence), and iv) inadequate housing (living in extreme overcrowding, unfit housing) (Amore, Baker, & Howden-Chapman, 2011). Some countries, such as Finland, Ireland and Sweden, distinguish between people who are experiencing long-term and recurrent homelessness associated with complex needs (e.g. comorbid mental health problems and substance use problems) and other groups of homeless people. The UK defines different types of homelessness (e.g. homeless families) in reference to the operation of homelessness laws, rather than through reference to the characteristics of homeless people themselves (Busch-Geertsema, Benjaminsen, Filipovič Hrast, & Pleace, 2014). In the USA, the generally accepted definition of homelessness refers to sleeping in homeless shelters, places not intended for human accommodation, or sleeping rough (Shinn, 2007). In the Netherlands, a distinction is often made between 'literal' homelessness and 'residential' homelessness; this categorisation was developed by Wolf et al. (2002). Literally homeless people are those that do not have their own living accommodation and have no fixed address, sleep rough on the streets, in homeless shelters, in public buildings, or are staying with relatives or friends (Dutch Government and four major cities, 2006; Statistics Netherlands, 2013; Wolf et al., 2002). Residentially homeless people live in residential homelessness services, such as accommodations for homeless people (e.g. hostels, pensions) (Dutch Government and four major cities, 2006; Wolf et al., 2002).

In this thesis, people who reported themselves at the social relief system in the Netherlands were regarded as homeless. Most of them were literally homeless (e.g. sleeping in a night shelter, transitional accommodation or staying temporarily with friends, relatives or acquaintances), a minority were residing in an institution (e.g. a residential care facility) and were residentially homeless, or were housed but were about to be evicted.

1.1.2 Prevalence of homelessness

Reporting a reliable worldwide prevalence of homelessness is not possible and the same applies for the prevalence of homelessness at the EU level. This is partly because definitions of homelessness vary (as reported in §1.1.1) and partly because there are variations in methods and instruments used, as well as in data quality and availability (Busch-Geertsema et al., 2014). Statistics Netherlands (CBS), the institute that annually reports the number of homeless people in the Netherlands, reports the number of literally homeless people. The National Federation of Shelters (Federatie Opvang) reports the number of people who sought and received help from social relief institutions (including both residentially and literally homeless people). In the Netherlands, in 2013 around 60,500 people sought and received help from social relief institutions, including almost 6200 homeless youth (aged <23 years) (Federatie Opvang,

2014). Statistics Netherlands estimated that 31,000 people are literally homeless in the Netherlands (Statistics Netherlands, 2016). Some of these 31,000 people are included in the 60,500 people who sought and received help from social relief institutions (i.e. those who sleep in homeless shelters), but some are not included in that number (e.g. those who sleep rough on the streets and do not seek help from institutions). Among homeless people in the Netherlands, there are 800 to 900 homeless families who make use of social relief facilities (Planije & Tuynman, 2015).

1.1.3 Causes of homelessness

Traditionally, homelessness has been explained by two broad and mutually exclusive categories: individual and structural causes. Nowadays, more integrated models of the causes of homelessness are generally applied (Fitzpatrick, Bramley, & Johnsen, 2013). These integrated models explain homelessness as a complex interplay between individual circumstances and structural factors. Four levels of causes have been identified (Fitzpatrick, 2005): economic structures, housing structures, interpersonal factors, and individual factors. These levels interact with each other through a series of feedback loops. The importance of these levels of causes can differ between homeless subgroups, or between countries (Fitzpatrick, Quilgars, & Pleace, 2009).

When asking Dutch homeless people about the reasons why they became homeless, their answers included: financial problems, conflicts or breaks in personal relationships, house evictions, loss of employment, psychological problems, problems with the use of drugs, contacts with the police and justice, and leaving prison (Buster et al., 2012; Maas, Al Shamma, Altena, Jansen, & Wolf, 2012; Van Everdingen, 2015; Van Laere, de Wit, & Klazinga, 2009; Van Straaten et al., 2012). This also demonstrates that the cause of homelessness can often be a combination of individual circumstances and structural factors. For example, loss of employment - which can be (partly) due to an economic situation in a country - can cause financial problems, which is associated with poorer health outcomes (Clayton, Liñares-Zegarra, & Wilson, 2015), increased risk for unhealthy drinking and smoking (Shaw, Agahi, & Krause, 2011), and negative cognitive consequences (Shah, Mullainathan, & Shafir, 2012).

1.1.4 Profile of homeless people

Homeless people live in a vulnerable situation and often suffer from health problems, psychological problems and/or psychosocial problems (Barendregt, Van de Mheen, & Wits, 2013; Buster et al., 2012; Fazel, Geddes, & Kushel, 2014; Fazel, Khosla, Doll, & Geddes, 2008; Maas et al., 2012; Nielsen, Hjorthøj, Erlangsen, & Nordentoft, 2011; Nusselder et al., 2013; Schanzer, Dominguez, Shrout, & Caton, 2007; Toro, Hobden, Wyszacki Durham, Oko-Riebau, & Bokszczanin, 2014; Van Everdingen, 2015; Wolf, Altena, Christians, & Beijersbergen, 2010). The relationship between these problems and homelessness can be bidirectional, i.e. these problems can be both a cause and a consequence of homelessness.
Homeless adults face excessive losses in life expectancy. A study comparing a cohort of homeless people in Rotterdam with the general Rotterdam population found that mortality rates were 3.5 times higher among the homeless (Nusselder et al., 2013). Cognitive dysfunctions are also more prevalent in homeless adults: a systematic review showed that 30-40% of homeless adults have a cognitive impairment (Spence, Stevens, & Parks, 2004). In general, the majority of homeless people in the Netherlands consists of single men, around 40 years of age, having a non-native Dutch background, low educated, and with a mix of both material problems (financial problems, low income, debts) and immaterial problems (mental and/or physical health problems) (Buster et al., 2012; Hulsbosch, Nicholas, & Wolf, 2005; Van Everdingen, 2015; Van Laere et al., 2009; Vocks, Meertens, & Wolf, 2007).

In the Netherlands, there seems to be a trend towards a shorter mean duration of homelessness among homeless people. To illustrate, from around the turn of the century until about 10 years ago (2001-2006), studies among Dutch homeless people showed that the mean duration of homelessness was around 6 years (De Bruin, Meijerman, & Verbraeck, 2003; Hulsbosch et al., 2005; Reinking, Wolf, & Kroon, 2001; Vocks et al., 2007). Being homeless can then gradually develop into a way of life: they socialise with other homeless people, they are seen as homeless by the environment, and may start viewing themselves as such (Van Doorn, 2002). More recent studies present substantially shorter mean durations of homelessness of around 3 years (Tielen, 2010) to as short a duration as a few months (Van Everdingen, 2015). Although these variations in the duration of homelessness might be influenced by the type of facility in which a study is conducted, this trend suggests that the profile of the homeless population in the Netherlands has changed substantially over recent years, possibly in part due to the influence of the Strategy Plan for Social Relief.

1.2 Factors related to homelessness

In this thesis, we investigated the individual perspective of homeless people. This perspective can provide important information for interventions that match with the individual. In particular, we explored the following factors: 1) substance use: in the scientific literature substance use is consistently identified as an important factor related to homelessness (see §1.2.1); 2) intellectual disability: this factor is receiving increasing attention in research and practice, and seems to play a role in a relatively large subgroup of homeless populations (see §1.2.2); and 3) care needs: investigating self-reported care needs is important to gain insight into what services are needed to fulfil the care needs of homeless people (see §1.2.3). Furthermore, all these factors are relevant for practice and for policymaking: e.g. improved understanding of substance use, intellectual disability and care needs is valuable when developing interventions, organising services, and to improve the quality of life of homeless people.

1.2.1 Substance use

Substance use has been characterised as the main mental health problem for homeless people (Fazel et al., 2008). A review among homeless populations in Western countries reported that alcohol dependence ranges from 8-59%, and drug dependence from 5-54% (Fazel et al., 2008). A large cohort study among Swedish homeless people found a prevalence of alcohol and drug diagnoses of 42% for men and 41% for women (Beijer & Andréasson, 2010). Substance use among homeless populations has consistently been associated with a number of adverse outcomes, such as premature mortality (Beijer, Andreasson, Agren, & Fugelstad, 2011), symptoms of mental illness (Palepu et al., 2012) and longer durations of homelessness (Aubry, Klodawsky, & Coulombe, 2012; Caton et al., 2005; North, Eyrich-Garg, Pollio, & Thirthalli, 2010;

Orwin, Scott, & Arieira, 2005; Patterson, Somers, & Moniruzzaman, 2012; Riley et al., 2007). In the Netherlands, studies conducted in the past decade which reported the percentage of heavy alcohol use among homeless people present prevalences ranging from 10-33% (Altena, Beijersbergen, Oliemeulen, & Wolf, 2010; Buster et al., 2012; Van Everdingen, 2015; Vocks et al., 2007). Regarding drug use, in a study on literally homeless people in the Netherlands, it was found that 18% was a user of hard drugs (Buster et al., 2012). A study among homeless people in low-threshold shelters reported a percentage of 57% drug users, mainly cannabis users (Van Everdingen, 2015).
Most recent internationally published studies on substance use among homeless people were conducted outside Europe, mostly in the USA (North et al., 2010; Padgett, Stanhope, Henwood, & Stefancic, 2011; Rhoades et al., 2011; Tsai, Kasprow, & Rosenheck, 2014) and Canada (Krausz et al., 2013; Palepu et al., 2012; Strehlau, Torchalla, Kathy, Schuetz, & Krausz, 2012). Due to factors such as the wide variation in prevalence rates of substance use among homeless populations and differences in drug markets and drug policy, these studies have limited generalisability to European countries. Although local and current data on substance use among homeless people are essential for health policy and care, there is a lack of comprehensive European studies on this issue. This thesis contributes additional information about this topic.

1.2.2 Intellectual disability

A more recent topic of interest in the field of homelessness is the prevalence of (mild) intellectual disability (IQ<70). A systematic review on cognitive dysfunction in homeless adults shows that 30-40% of homeless adults have a cognitive impairment (Spence et al., 2004). In another study, 12% of 50 homeless people met the criteria for intellectual disability (Oakes & Davies, 2008). In the Netherlands, it was estimated that 25% of the homeless people in the social relief system have a suspected (mild) intellectual disability (Van den Broek, 2012). Another study screened Dutch homeless people attending low-threshold shelters on intellectual disability and reported an indication of an intellectual disability among 38% of this group (Van Everdingen, 2015). Compared to the prevalence of intellectual disability in the general Dutch population, which is about 0.7% (Wullink, van Schrojenstein Lantman-de Valk, Dinant, & Metsemakers, 2007), the prevalence reported among homeless populations is high. However, sample sizes in the studies mentioned above are relatively small and most included only homeless people living in a specific facility, which can limit the generalisability of these estimates to other homeless populations. More insight into intellectual disability among homeless people is needed because this may represent a relatively common problem among homeless populations. Information about this subgroup may also have implications for interventions, homeless services and policy.

1.2.3 Care needs

Among homeless people in general, care needs are well investigated. Although homelessness is associated with higher rates of mental health problems, substance use problems (Fazel et al., 2008) and medical problems (Hwang, 2001), unmet care needs and underutilisation of services are reported (Baggett, O'Connell, Singer, & Rigotti, 2010; Krausz et al., 2013; Palepu et al., 2013). Homeless people in the Netherlands mainly report unmet care needs on housing, finances and dental problems (Altena et al., 2010; Hulsbosch et al., 2005; Vocks et al., 2007). Most international studies on care needs among the homeless have focused mainly on (unmet) healthcare needs (Baggett et al., 2010; Desai & Rosenheck, 2005; Kertesz et al., 2014), while insight into a broader range of care needs, including (amongst others) housing, finances, basic skills (i.e. reading, writing), empowerment and social contacts, is lacking in the international literature. In addition, little is known about the care needs of homeless people with a suspected intellectual disability. Understanding the similarities and differences in the care needs of subgroups of the homeless is essential to develop interventions and to organise services.

1.3 Stable housing

Housing stability is an important focus in research on homeless people. Studies with stable housing as the main outcome have shown the following negative predictors of stable housing: substance abuse (Orwin et al. 2005; North et al. 2010; Palepu et al. 2010; Aubry et al. 2012), having income assistance (Palepu et al., 2010), belonging to an older age group (>44 years), having an arrest history (Caton et al., 2005), and a longer duration of homelessness (Zlotnick, Robertson, & Lahiff, 1999). Among the positive predictors of stable housing are: an intimate partner relationship (Palepu et al., 2010), having others who are dependent on the homeless person for food/shelter (Orwin et al., 2005), a better psychosocial adjustment, recent or current employment, earned income, adequate family support, no current drug treatment (Caton et al., 2005), entitlement benefits (Zlotnick et al., 1999) and being female (Pollio, North, Thompson, Paquin, & Spitznagel, 1997).

Studies among homeless people with housing stability as an outcome have used different definitions of stable housing. They also differ regarding the types of residency on which the housing stability was based (e.g. living in a place of one's own, or also including staying in a residential care facility) and regarding the time period an individual has to be housed to categorise the housing situation as being 'stable' (e.g. a duration of 90 days of being housed, or for a longer period of time). This may also explain why the percentages of stably housed formerly homeless persons at follow-up reported in these studies range from around 20% (Zlotnick et al. 1999; North et al. 2010; Palepu et al. 2010) to ≥ 60% (Aubry et al., 2012; Orwin et al., 2005).
It is remarkable that none of the definitions of stable housing that we found included the perspective of homeless people. Housing stability implies a positive situation (Srebnik, Livingston, Gordon, & King, 1995); however, it seems questionable whether a housing situation can genuinely be called 'stable' when the characteristics of the housing situation are unsatisfactory or inadequate according to the individual concerned. Incorporating the perspective of homeless people will justify the positive connotation of housing stability, especially because there is a positive relation between housing satisfaction and residential stability (i.e. no change in residence) (Srebnik et al., 1995). Client satisfaction is also an indicator of service quality (Altena, Beijersbergen, & Wolf, 2014) and is associated with better treatment outcomes (Hser, Evans, Huang, & Anglin, 2004). In addition, taking the personal perspective of people seriously increases their sense of autonomy and competence, both of which are related to better health outcomes and general satisfaction with life in other populations (Ryan, Patrick, Deci, & Williams, 2008).
The work presented in this thesis attempts to do more justice to the perspective of homeless people themselves regarding their housing situation. Incorporating the perspective of homeless individuals also

fits the current focus (in both research and policymaking) on the client's perspective, and fits the central role of the perspective of homeless people in CODA-G4.

1.4 Social exclusion

Homelessness is inherently associated with social exclusion because the characteristics intertwined with homelessness, such as lack of housing, financial debts and lack of social support (Fazel, Geddes, & Kushel, 2014; Tsai, Mares, & Rosenheck, 2012; Van Laere, de Wit, & Klazinga, 2009) are also considered components of social exclusion (Jehoel-Gijsbers & Vrooman, 2007; Morgan, Burns, Fitzpatrick, Pinfold, & Priebe, 2007; Vrooman & Hoff, 2013). Homeless individuals can be considered one of the most extreme socially excluded groups in society (European Commission, 2009). However, homeless persons are rarely included in conventional studies on social exclusion mainly because they are not a member of a conventional household, which is frequently used as a sample framework in studies on social exclusion (Popay et al., 2008). Therefore, extra attention should be paid to homeless people in research on social exclusion.

Social exclusion refers to people who experience an accumulation of disadvantages in society (Vrooman & Hoff, 2013) and is regarded as a multidimensional concept (Coumans & Schmeets, 2015; Jehoel-Gijsbers & Vrooman, 2007; Papadopoulos & Tsakloglou, 2001; Poggi, 2007; Sen, 2000; Vrooman & Hoff, 2013). Although conceptualisation of the dimensions which are part of social exclusion varies in the literature on social exclusion, two main dimensions can generally be distinguished: i) structural-economic exclusion; and ii) socio-cultural exclusion (Vrooman & Hoff, 2013). Structural-economic exclusion refers to a distributional dimension and includes a material (income and goods) and a non-material (social rights) aspect. Socio-cultural exclusion refers to a relational dimension and includes social integration which involves: i) social relations and networks, and ii) cultural integration which concerns values and norms. Measuring social exclusion by means of multiple indicators is the most common approach (Morgan et al., 2007).

Among the general population, those who are socially excluded generally have a significantly poorer mental health than the non-excluded (Jehoel-Gijsbers & Vrooman, 2007; Payne, 2006). Apart from a relationship between mental health and social exclusion in general, mental health is also related to separate indicators of social exclusion. For example, relationships have been demonstrated between debts and mental health (Richardson, Elliott, & Roberts, 2013), between social support and mental health (Kawachi, 2001; Tsai, Desai, & Rosenheck, 2012) and between employment and mental health (Thomas, Benzeval, & Stansfeld, 2005). However, to our knowledge, these relationships have not been investigated among homeless persons, which makes it highly relevant to investigate the relationship between mental health and indicators of social exclusion among homeless people. This thesis examines changes in indicators of social exclusion among homeless people over a period of 2.5 years and also addresses associations of changes in indicators of social exclusion with changes in psychological distress.

1.5 Aim and research questions

The aim of this thesis is a) to explore factors - substance use, intellectual disability and care needs - related to homelessness and their development over time among homeless people in the Netherlands, b) to investigate predictors of stable housing, and c) to explore changes in indicators of social exclusion and the association between changes in indicators of social exclusion and psychological distress.
These aims are operationalised by means of the following research questions:

1. What is the prevalence of substance use, substance misuse and dependence among Dutch homeless people and what is their pattern of substance use over time?
2. What is the prevalence of intellectual disability among Dutch homeless people and is intellectual disability related to psychosocial problems?
3. What are the care needs of Dutch homeless people with and without an intellectual disability and how do these care needs develop over time?
4. What is the prevalence of stable housing among Dutch homeless people and what are predictors of stable housing 2.5 years after they report to the social relief system?
5. What are the changes in indicators of social exclusion among Dutch homeless people and are changes in indicators of social exclusion associated with changes in psychological distress over a period of 2.5 years after reporting to the social relief system?

Before presenting an outline of the studies in this thesis, §1.6 provides a brief introduction to CODA-G4.

1.6 CODA-G4

CODA-G4 is an observational longitudinal multi-site cohort study which followed over 500 homeless people in Amsterdam, Rotterdam, The Hague and Utrecht (the 'G4') for a period of 2.5 years, starting from the moment they reported themselves at a central access point for social relief. This study was set up at the request of and with financial support from the Ministry of Health, Welfare and Sport of the Netherlands. The main objectives of CODA-G4 were to determine: 1) the needs and goals of homeless people who were accepted for an individual programme plan, in relation to their background and problems; 2) housing transitions as well as predictors of stable housing; and 3) changes in the living situation and quality of life of homeless people, and predictors of quality of life. CODA-G4 presents a unique opportunity to monitor the situation of homeless people in the Netherlands over a long period of time.

The cohort study was initiated in 2010. The participants were interviewed face-to-face by trained interviewers four times during the study period. The final interview took place in 2014.

1.6.1 Recruitment of potential participants

In January 2011, potential participants were approached either at a central access point for social relief (one in each city) by an employee of the access point, or at a temporary accommodation where they stayed shortly after entering the social relief system, by the researchers or interviewers. When a potential

participant expressed interest in taking part in the study, the researchers contacted that person to explain the study aims, the interview procedure, and the informed consent. No initial non-response data are available.

Study participants consisting of homeless adults (aged ≥ 23 years; *n*=410) and young adults (aged 18-22 years; *n*=103) who satisfied the criteria set by the four major Dutch cities at that time for starting an individual programme plan. These include: aged ≥ 18 years, having legal residence in the Netherlands, residing in the region of application for at least two years during the last three years, having abandoned the home situation, and being unable to hold one's own in society. The number of participants required was divided over the four cities in accordance with the inflow of homeless people at the central access points for social relief.

1.6.2 Interviews

When participants agreed to participate, an interview appointment was scheduled. A trained interviewer met the participant at the participant's location of choice (generally a shelter facility, public library, or the researcher's office). All participants gave written informed consent. Participants were interviewed face-to-face using a structured questionnaire (mean duration of 1.5 h) and received €15 (around $17) for participation in the baseline interview. The interviews were held in Dutch, English, Spanish or Arabic. Participants were contacted at 6 months, 18 months and 30 months after the first measurement by telephone, e-mail, letter, their social contacts, their caregiver/institution, or private messages via social media.

1.7 Outline of the thesis

After this introductory chapter, **Chapter 2** provides additional information on the design of CODA-G4, including a description of the tracking methods used to follow the cohort longitudinally. The subsequent chapters present the empirical studies addressing the research questions. **Chapter 3** describes the prevalence of substance use among the cohort, and the pattern of substance use over time. **Chapter 4** reports on the prevalence of a suspected intellectual disability and explores the psychosocial problems related to a suspected intellectual disability. **Chapter 5** further explores the subgroup of homeless people with a suspected intellectual disability with regard to their self-reported care needs. **Chapter 6** examines the prevalence and predictors of stable housing. **Chapter 7** analyses changes in indicators of social exclusion among homeless people and investigates whether changes in indicators of social exclusion are associated with changes in psychological distress. This thesis concludes with a general discussion (**Chapter 8**) which addresses the main findings and methodological considerations, and presents implications for practice, theory and further research.

1.8 References

Altena, A., Beijersbergen, M., Oliemeulen, L., & Wolf, J. (2010). ***Bewoners van voorzieningen voor lang verblijf in Utrecht. Onderzoek naar functioneren en woonwensen***. Nijmegen.

Altena, A. M., Beijersbergen, M. D., & Wolf, J. R. L. M. (2014). Homeless youth's experiences with shelter and community care services: Differences between service types and the relationship to overall service quality. *Children and Youth Services Review*, 46, 195–202. doi:10.1016/j.childyouth.2014.08.019

Amore, K., Baker, M., & Howden-Chapman, P. (2011). The ETHOS Definition and Classification of Homelessness: An Analysis. *European Journal of Homelessness*, 5(2), 19–37.

Aubry, T., Klodawsky, F., & Coulombe, D. (2012). Comparing the housing trajectories of different classes within a diverse homeless population. *American Journal of Community Psychology*, 49(1-2), 142–55. doi:10.1007/s10464-011-9444-z

Baggett, T. P., O'Connell, J. J., Singer, D. E., & Rigotti, N. a. (2010). The unmet health care needs of homeless adults: a national study. *American Journal of Public Health*, 100(7), 1326–33. doi:10.2105/AJPH.2009.180109

Barendregt, C., Van de Mheen, D., & Wits, E. (2013). ***Screenen op middelengebruik en psychische klachten in de maatschappelijke opvang. Zes screeners gevalideerd en getest op bruikbaarheid***. Rotterdam.

Beijer, U., & Andréasson, S. (2010). Gender, hospitalization and mental disorders among homeless people compared with the general population in Stockholm. *The European Journal of Public Health*, 20(5), 511–516.

Beijer, U., Andreasson, S., Agren, G., & Fugelstad, A. (2011). Mortality and causes of death among homeless women and men in Stockholm. *Scandinavian Journal of Public Health*, 39(2), 121–7. doi:10.1177/1403494810393554

Busch-Geertsema, V., Benjaminsen, L., Filipovič Hrast, M., & Pleace, N. (2014). ***Extent and Profile of Homelessness in European Member States: A Statistical Update***. Brussels.

Buster, M., Hensen, M., Wit, M. de, Runtuwene, N., Mandos, E., Zeele, S. van, … Bergen, A. van. (2012). ***Feitelijk dakloos in de G4***. Amsterdam, Rotterdam, Den Haag en Utrecht.

Caton, C. L. M., Dominguez, B., Schanzer, B., Hasin, D. S., Shrout, P. E., Felix, A., … Hsu, E. (2005). Risk factors for long-term homelessness: findings from a longitudinal study of first-time homeless single adults. *American Journal of Public Health*, 95(10), 1753–9. doi:10.2105/AJPH.2005.063321

Clayton, M., Liñares-Zegarra, J., & Wilson, J. O. S. (2015). Does debt affect health? Cross country evidence on the debt-health nexus. *Social Science & Medicine*, 130, 51–58. doi:10.1016/j.socscimed.2015.02.002

Coumans, M., & Schmeets, H. (2015). The Socially Excluded in the Netherlands: The Development of an Overall Index. *Social Indicators Research*, 122(3), 779–805. doi:10.1007/s11205-014-0707-6

De Bruin, D., Meijerman, C., & Verbraeck, H. (2003). ***Zwerven in de 21ste eeuw: een exploratief onderzoek naar geestelijke gezondheidsproblematiek en overlast van dak- en thuislozen in Nederland***. Utrecht: Centrum voor Verslavingsonderzoek.

Desai, M. M., & Rosenheck, R. a. (2005). Unmet need for medical care among homeless adults with serious mental illness. *General Hospital Psychiatry*, 27(6), 418–25. doi:10.1016/j.genhosppsych.2005.06.003

Dutch Government and four major cities. (2006). ***Strategy Plan for Social Relief***.

European Commission. (2009). *Joint Report on Social Protection and Social Inclusion. Communities*. Luxembourg: Office for Official Publications of the European Communities.

Fazel, S., Geddes, J. R., & Kushel, M. (2014). The health of homeless people in high-income countries: descriptive epidemiology, health consequences, and clinical and policy recommendations. *The Lancet*, 384(9953), 1529–1540. doi:10.1016/S0140-6736(14)61132-6

Fazel, S., Khosla, V., Doll, H., & Geddes, J. (2008). The prevalence of mental disorders among the homeless in western countries: systematic review and meta-regression analysis. *PLoS Medicine*, 5(12), e225. doi:10.1371/journal.pmed.0050225

Federatie Opvang. (2014). *Factsheet Maatschappelijke Opvang in 2013*. Amersfoort.

Fitzpatrick, S. (2005). Explaining Homelessness: a Critical Realist Perspective. *Housing, Theory and Society*, 22(1), 1–17. doi:10.1080/14036090510034563

Fitzpatrick, S., Bramley, G., & Johnsen, S. (2013). Pathways into Multiple Exclusion Homelessness in Seven UK Cities. *Urban Studies*, 50(1), 148–168. doi:10.1177/0042098012452329

Fitzpatrick, S., Quilgars, D., & Pleace, N. (2009). *Homelessness in the UK: problems and solutions*. Coventry: Chartered Institute for Housin.

Hermans, K. (2012). The Dutch Strategy to Combat Homelessness: From Ambition to Window Dressing? *European Journal of Homelessness*, 6(2), 101–118.

Hser, Y.-I., Evans, E., Huang, D., & Anglin, D. M. (2004). Relationship Between Drug Treatment Services, Retention, and Outcomes. *Psychiatric Services*, 55(7), 767–774.

Hulsbosch, L., Nicholas, S., & Wolf, J. (2005). *Dakloos in Leiden. Onderzoek naar omvang en kenmerken van de daklozenpopulatie*. Utrecht.

Hwang, S. W. (2001). Homelessness and health. *CMAJ: Canadian Medical Association Journal*, 164(2), 229–33. Retrieved from www.ncbi.nlm.nih.gov/pubmed/16078553

Jehoel-Gijsbers, G., & Vrooman, C. (2007). Explaining social exclusion. A theoretical model tested in the Netherlands. *International Journal of Sociology and Social Policy*, 21(4/5/6). doi:10.1108/01443330110789411

Kawachi, I. (2001). Social Ties and Mental Health. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, 78(3), 458–467. doi:10.1093/jurban/78.3.458

Kertesz, S. G., McNeil, W., Cash, J. J., Desmond, R., McGwin, G., Kelly, J., & Baggett, T. P. (2014). Unmet need for medical care and safety net accessibility among Birmingham's homeless. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, 91(1), 33–45. doi:10.1007/s11524-013-9801-3

Krausz, R. M., Clarkson, A. F., Strehlau, V., Torchalla, I., Li, K., & Schuetz, C. G. (2013). Mental disorder, service use, and barriers to care among 500 homeless people in 3 different urban settings. *Social Psychiatry and Psychiatric Epidemiology*, 48(8), 1235–1243. doi:10.1007/s00127-012-0649-8

Maas, M., Al Shamma, S., Altena, A., Jansen, N., & Wolf, J. (2012). *Discus Amsterdam: Housing First Evaluatie van de werkzaamheid*. Nijmegen.

Morgan, C., Burns, T., Fitzpatrick, R., Pinfold, V., & Priebe, S. (2007). Social exclusion and mental health: conceptual and methodological review. *The British Journal of Psychiatry : The Journal of Mental Science*, 191(6), 477–83. doi:10.1192/bjp.bp.106.034942

Nielsen, S. F., Hjorthøj, C. R., Erlangsen, A., & Nordentoft, M. (2011). Psychiatric disorders and mortality among people in homeless shelters in Denmark: A nationwide register-based cohort study. *The Lancet*, 377(9784), 2205–2214. doi:10.1016/S0140-6736(11)60747-2

North, C. S., Eyrich-Garg, K. M., Pollio, D. E., & Thirthalli, J. (2010). A prospective study of substance use and housing stability in a homeless population. *Social Psychiatry and Psychiatric Epidemiology*, 45(11), 1055–62. doi:10.1007/s00127-009-0144-z

Nusselder, W. J., Slockers, M. T., Krol, L., Slockers, C. T., Looman, C. W. N., & van Beeck, E. F. (2013). Mortality and Life Expectancy in Homeless Men and Women in Rotterdam: 2001-2010. *PLoS ONE*, 8(10), 1–7. doi:10.1371/journal.pone.0073979

Oakes, P. M., & Davies, R. C. (2008). Intellectual disability in homeless adults: a prevalence study. *J Intellect Disabil*, 12(4), 325–34. doi:10.1177/1744629508100496

Orwin, R. G., Scott, C. K., & Arieira, C. (2005). Transitions through homelessness and factors that predict them. *Journal of Substance Abuse Treatment*, 28(2), S23–S39. doi:10.1016/j.jsat.2004.10.011

Padgett, D. K., Stanhope, V., Henwood, B. F., & Stefancic, A. (2011). Substance use outcomes among homeless clients with serious mental illness: comparing Housing First with Treatment First programs. *Community Mental Health Journal*, 47(2), 227–32. doi:10.1007/s10597-009-9283-7

Palepu, A., Gadermann, A., Hubley, A. M., Farrell, S., Gogosis, E., Aubry, T., & Hwang, S. W. (2013). Substance use and access to health care and addiction treatment among homeless and vulnerably housed persons in three Canadian cities. *PloS One*, 8(10), e75133. doi:10.1371/journal.pone.0075133

Palepu, A., Marshall, B. D. L., Lai, C., Wood, E., & Kerr, T. (2010). Addiction treatment and stable housing among a cohort of injection drug users. *PloS One*, 5(7), e11697. doi:10.1371/journal.pone.0011697

Palepu, A., Patterson, M., Strehlau, V., Moniruzzamen, A., de Bibiana, J. T., Frankish, J., … Somers, J. (2012). Daily Substance Use and Mental Health Symptoms among a Cohort of Homeless Adults in Vancouver, British Columbia. *Journal of Urban Health : Bulletin of the New York Academy of Medicine*. doi:10.1007/s11524-012-9775-6

Papadopoulos, F., & Tsakloglou, P. (2001). *Indicators of Social Exclusion in EUROMOD, EUROMOD Working Paper EM8/01*. Athens.

Patterson, M. L., Somers, J. M., & Moniruzzaman, A. (2012). Prolonged and persistent homelessness: multivariable analyses in a cohort experiencing current homelessness and mental illness in Vancouver, British Columbia. *Mental Health and Substance Use*, 5(2), 85–101. doi:10.1080/17523281.2011.618143

Payne, S. (2006). *Mental health, poverty and social exclusion. In Poverty and Social Exclusion in Britain (eds C. Pantazis, D. Gordon & R. Levitas)*.

Planije, M., & Tuynman, M. (2015). *Gezinnen in de maatschappelijke opvang. Opvang en ondersteuning van dakloze gezinnen.* Utrecht.

Poggi, A. (2007). Does persistence of social exclusion exist in Spain? *Journal of Economic Inequality*, 5(1), 53–72. doi:10.1007/s10888-006-9025-9

Pollio, D., North, C. S., Thompson, S., Paquin, J., & Spitznagel, E. (1997). Predictors of achieving stable housing in a mentally ill homeless population. *Psychiatric Services*, 48(4). Retrieved from journals.psychiatryonline.org/data/Journals/PSS/3466/528.pdf

Popay, J., Escorel, S., Hernández, M., Johnston, H., Mathieson, J., & Rispel, L. (2008). *Understanding and tackling social exclusion. Final report to the WHO Commission on Social Determinants of Health from the Social Exclusion Knowledge Network*. Geneva. doi:10.1177/1744987110370529

Reinking, D. P., Wolf, J. R. L. M., & Kroon, H. (2001). Hoge prevalentie van psychische stoornissen en verslavingsproblemen bij daklozen in de stad Utrecht. *Ned Tijdschr Geneeskd*, 145(1161), 1166.

Rhoades, H., Wenzel, S. L., Golinelli, D., Tucker, J. S., Kennedy, D. P., Green, H. D., & Zhou, A. (2011). The social context of homeless men's substance use. *Drug and Alcohol Dependence*, 118(2-3), 320–5. doi:10.1016/j.drugalcdep.2011.04.011

Richardson, T., Elliott, P., & Roberts, R. (2013). The relationship between personal unsecured debt and mental and physical health: A systematic review and meta-analysis. *Clinical Psychology Review*, 33(8), 1148–1162. doi:10.1016/j.cpr.2013.08.009

Riley, E. D., Weiser, S. D., Sorensen, J. L., Dilworth, S., Cohen, J., & Neilands, T. B. (2007). Housing patterns and correlates of homelessness differ by gender among individuals using San Francisco free food programs. *Journal of Urban Health*, 84(3), 415–422. doi:10.1007/s11524-006-9153-3

Ryan, R. M., Patrick, H., Deci, E. L., & Williams, G. C. (2008). Facilitating health behaviour change and its maintenance : Interventions based on Self-Determination Theory. *The European Health Psychologist*, 10, 2–5.

Schanzer, B., Dominguez, B., Shrout, P. E., & Caton, C. L. M. (2007). Homelessness, Health Status, and Health Care Use. *American Journal of Public Health*, 97(3), 464–469. doi:10.2105/AJPH.2005.076190

Sen, A. (2000). *Social Exclusion: Concept, Application and Scrutiny*. *Social Development*. Manila: Asian Development Bank. doi:10.1.1.100.1010

Shah, A. K., Mullainathan, S., & Shafir, E. (2012). Some Consequences of Having Too Little. *Science*, 338(6107), 682–685. doi:10.1126/science.1222426

Shaw, B. a, Agahi, N., & Krause, N. (2011). Are changes in financial strain associated with changes in alcohol use and smoking among older adults?. *Journal of Studies on Alcohol and Drugs*, 72(6), 917–925. Retrieved from ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=medl&NEWS=N&AN=22051205

Shinn, M. (2007). International homelessness: Policy, socio-cultural, and individual perspectives. *Journal of Social Issues*, 63(3), 657–677. doi:10.1111/j.1540-4560.2007.00529.x

Spence, S., Stevens, R., & Parks, R. (2004). Cognitive dysfunction in homeless adults: a systematic review. *Journal of the Royal Society of Medicine*, 97(8), 375–9. doi:10.1258/jrsm.97.8.375

Srebnik, D., Livingston, J., Gordon, L., & King, D. (1995). Housing choice and community success for individuals with serious and persistent mental illness. *Community Mental Health Journal*, 31(2), 139–152. doi:10.1007/BF02188763

Statistics Netherlands. (2013). 27 thousand homeless in the Netherlands. Retrieved from www.cbs.nl/en-GB/menu/themas/bevolking/publicaties/artikelen/archief/2013/2013-4016-wm.htm

Statistics Netherlands. (2016). Aantal daklozen in zes jaar met driekwart toegenomen. Retrieved from www.cbs.nl/nl-NL/menu/themas/bevolking/publicaties/artikelen/archief/2016/aantal-daklozen-in-zes-jaar-met-driekwar-toegenomen.htm

Statistics Netherlands (CBS). (2015). Stijging aantal daklozen lijkt voorbij. Retrieved from www.cbs.nl/nl-NL/menu/themas/bevolking/publicaties/artikelen/archief/2015/stijging-aantal-daklozen-lijkt-voorbij.htm

Strehlau, V., Torchalla, I., Kathy, L., Schuetz, C., & Krausz, M. (2012). Mental health, concurrent disorders, and health care utilization in homeless women. *Journal of Psychiatric Practice*, 18(5), 349–60. doi:10.1097/01.pra.0000419819.60505.dc

Thomas, C., Benzeval, M., & Stansfeld, S. a. (2005). Employment transitions and mental health: an analysis from the British household panel survey. *Journal of Epidemiology and Community Health*, 59(3), 243–249. doi:10.1136/jech.2004.019778

Tielen, H. (2010). *Dakloos in Leiden. Telling en omvangschatting van de volwassen populatie*. Leiden.

Toro, P. A., Hobden, K. L., Wyszacki Durham, K., Oko-Riebau, M., & Bokszczanin, A. (2014). Comparing the characteristics of homeless adults in Poland and the United States. *American Journal of Community Psychology*, 53(1-2), 134–45. doi:10.1007/s10464-014-9632-8

Tsai, J., Desai, R. A., & Rosenheck, R. A. (2012). Social integration of people with severe mental illness: Relationships between symptom severity, professional assistance, and natural support. *Journal of Behavioral Health Services and Research*, 39(2), 144–157. doi:10.1007/s11414-011-9266-7

Tsai, J., Kasprow, W. J., & Rosenheck, R. a. (2014). Alcohol and drug use disorders among homeless veterans: prevalence and association with supported housing outcomes. *Addictive Behaviors*, 39(2), 455–60. doi:10.1016/j.addbeh.2013.02.002

Tsai, J., Mares, A. S., & Rosenheck, R. A. (2012). Does Housing Chronically Homeless Adults Lead to Social Integration? *Psychiatric Services*, 63(5), 427. doi:10.1176/appi.ps.201100047

Van den Broek, P. A. M. (2012). *(On)Beperkte Opvang. Mensen met Licht Verstandelijke Beperkingen in de Maatschappelijke Opvang*. Amersfoort/Utrecht.

Van Doorn, L. (2002). *Een tijd op straat: een volgstudie naar (ex-)daklozen in Utrecht (1993-2000)*. Utrecht: NIZW.

Van Everdingen, C. (2015). *Verwarde mensen op straat*. Sittard.

Van Laere, I. R., de Wit, M. a, & Klazinga, N. S. (2009). Pathways into homelessness: recently homeless adults problems and service use before and after becoming homeless in Amsterdam. *BMC Public Health*, 9, 3. doi:10.1186/1471-2458-9-3

Van Straaten, B., Van der Laan, J., Schrijvers, C., Boersma, S., Maas, M., Wolf, J., & Van de Mheen, D. (2012). *Profiel van daklozen in de vier grote steden*. Rotterdam / Nijmegen. Retrieved from www.codag4.nl/publicaties

Vocks, J., Meertens, V., & Wolf, J. (2007). *Dakloos in Zwolle. Onderzoek naar omvang en profiel van de daklozenpopulatie*. Nijmegen.

Vrooman, J. C., & Hoff, S. J. M. (2013). The Disadvantaged Among the Dutch: A Survey Approach to the Multidimensional Measurement of Social Exclusion. *Social Indicators Research*, 113(3), 1261–1287. doi:10.1007/s11205-012-0138-1

Wolf, J., Altena, A., Christians, M., & Beijersbergen, M. (2010). *Onderzoek naar dakloze jongeren in de centrumregio Zwolle*. Nijmegen.

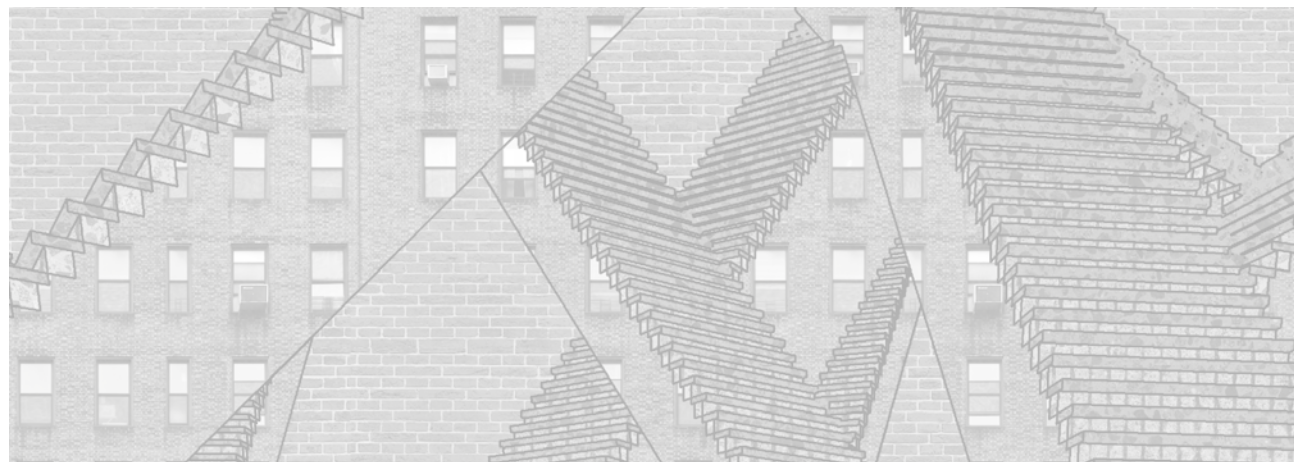
Wolf, J., Zwikker, M., Nicholas, S., Van Bakel, H., Reinking, D., & Van Leiden, I. (2002). *Op achterstand. Een onderzoek naar mensen in de marge van Den Haag*. Utrecht.

Wullink, M., van Schrojenstein Lantman-de Valk, H. M. J., Dinant, G. J., & Metsemakers, J. F. M. (2007). Prevalence of people with intellectual disability in the Netherlands. *Journal of Intellectual Disability Research: JIDR*, 51(Pt 7), 511–9. doi:10.1111/j.1365-2788.2006.00917.x

Zlotnick, C., Robertson, M. J., & Lahiff, M. (1999). Getting off the streets: Economic resources and residential exits from homelessness. *Journal of Community Psychology*, 27(2), 209–224.

chapter 2

Homeless people in the Netherlands: CODA-G4, a 2.5-year follow-up study



Homeless people in the Netherlands: CODA-G4, a 2.5-year follow-up study

Barbara Van Straaten, Dike Van de Mheen, Jorien Van der Laan, Gerda Rodenburg, Sandra N. Boersma, Judith R.L.M. Wolf

European Journal of Homelessness, 2016, 10(1), 101-116.

2.1 Abstract

This observational longitudinal multi-site cohort study followed over 500 homeless people for a period of 2.5 years, starting from the moment they reported at a central access point for social relief. Data were collected specifically for the cohort. This study, in which the perspectives of the homeless people plays a central role, explores the care needs and goals of homeless people and focuses on changes in housing, living situations, and quality of life. By means of four face-to-face interviews, information was assessed on socio-demographics and background; care needs and goals; housing status and transitions in housing; living situations (including health, work and finances, social relations, criminal activities); and quality of life. This study achieved a high response rate of almost 75% at final follow-up. Essential elements of the successful tracking and follow-up of a homeless population are discussed. The main results regarding the characteristics of the cohort, housing and housing stability, and quality of life are presented.

2.2 Introduction

It is estimated that around 60,500 clients are in the Dutch social relief system (Federatie Opvang, 2014). Most of these people live in a vulnerable situation and often suffer from health problems, psychiatric disabilities and psychosocial problems. In addition, they often lack basic necessities in life (housing, income, etc.) and are unable to sustain themselves in society. In 2006, the prevention of chronic homelessness in the Netherlands became a specific focus of policy with the adoption of the Strategy Plan for Social Relief (Dutch Government and four major cities, 2006). This Strategy Plan was implemented to provide homeless people with an income, suitable accommodation and effective support, and to reduce the level of public nuisance caused by homeless people in four major cities in the Netherlands (i.e. Amsterdam, Rotterdam, The Hague and Utrecht) by means of an individual programme plan.

The main objective of the study was to determine the following aspects of the (lives of) homeless individuals accepted for an individual programme plan: 1) their care needs and goals in relation to their background and problems, 2) their housing transitions and predictors of stable housing, and 3) changes in their living situation (including health, work/finances, social relations, criminal activities) and quality of life as well as predictors of quality of life. To obtain this information, a cohort study was performed at the request of, and with financial support from the Dutch Ministry of Health, Welfare and Sport: Cohortstudie Daklozen in de G4: CODA-G4. A cohort study was considered the most appropriate method to evaluate the effects of the homelessness policy.

2.3 Cohort description

This observational longitudinal multi-site cohort study followed over 500 homeless people for a period of 2.5 years; study entry started from the moment an individual reported at a central access point for social relief in 2011 in one of the four major cities in the Netherlands and was accepted for an individual programme plan. It is obligatory for every homeless person to report at a central access point for social relief in order to gain access to social relief facilities, such as a night shelter.

At the start of the study in January 2011, potential participants were approached either at a central access point for social relief (one in each city), by an employee of the access point, or at temporary accommodation (where they stayed shortly after entering the social relief system) by the researchers or interviewers. When a potential participant expressed interest in taking part in the study, the researchers contacted that person to explain the study aims, the interview procedure, and the informed consent procedure. When the participant agreed to participate, an interview appointment was scheduled.
A trained interviewer met the participant at the individual's location of choice (generally a shelter facility, public library, or the researcher's office). All participants gave written informed consent. Participants were interviewed face-to-face using a structured questionnaire (mean duration of 1.5 hours) and received €15 for participation on the baseline interview. The interviews were held in Dutch, English, Spanish or Arabic. To take into account the possibility of some participants being illiterate or having a cognitive disability, we also presented the questionnaires orally. In addition, for questions with a multiple-choice format, the participant was shown cards with the answering categories already listed and we also repeated the categories verbally.

All 513 participants, including homeless adults (aged ≥ 23 years; *n*=410) and young adults (aged 18-22 years; *n*=103), satisfied the criteria set by the four Dutch cities at that time for starting an individual programme plan. These include: being aged ≥ 18 years, having legal residence in the Netherlands, having resided in the region of application for at least two years of the last three years, having abandoned the home situation, and being unable to hold one's own in society. The number of participants was divided across the four cities in accordance with the inflow of homeless people at the central access points for social relief in these cities.

It was not feasible for the staff at the access points to systematically register data on how many potential participants were approached and how many refused to participate, because their core tasks were already very time consuming. However, to obtain information on the representativeness of the study participants, we compared the total group of homeless adults and young adults who reported themselves at a central access point for social relief in one of the four cities in 2011 with the study participants on age and gender. Adult participants were representative in terms of age and gender. Young adult participants were representative in terms of age but, in this subgroup, males were overrepresented.

Follow-up measurements
Participants were contacted at 6 months, 18 months and 30 months after the first measurement by telephone, e-mail, letter, their social network (family, friends and care providers), or private messages via social media. Participants who were lost to follow-up at one or more measurement were again contacted for the next measurement(s). Participants were interviewed following the same procedure as used for the first measurement and received €20 for participation at the second interview, €25 for participation at the third interview and €30 for participation at the fourth interview. The fourth interview was the final interview.

We successfully followed this homeless population by means of the following methods (Mckenzie, Long, & Chesney, 1999; North, Black, & Pollio, 2012):

1) collection of extensive contact information about the participant (telephone number, e-mail address, location where the participant regularly hangs out or resides), and about individuals in the participant's social network: the collection of contact information about the participant's relevant contacts after each interview was a particularly key element in the successful tracking of this group.
2) use of digital social networks such as Facebook: a Facebook profile was created for this cohort study. Private messages were sent when we found a participant online; this was particularly effective for the younger participants. Whereas earlier studies mentioned the telephone as an important tool in tracking difficult-to-follow populations, online social networks seem to be a promising tool for the future; a high proportion of homeless young adults use social network sites (Guadagno, Muscanell, & Pollio, 2013).
3) use of cash incentives: we increased the financial incentives given to participants after each interview to promote participation in the subsequent follow-up interviews.

4) personal interviews by experienced interviewers: participants were interviewed face-to-face by interviewers who were selected based on good social skills and experience with vulnerable people. We tried to ensure that (as far as possible) participants were interviewed by the same interviewer at each measurement. Participants experienced this as very pleasant and reported that it contributed substantially to feelings of trust and confidence.
5) assurance of confidentiality: at each measurement, the interviewers emphasised that the information revealed by participants was confidential.
6) flexibility of the interviewers: as far as possible, the interviews were held at the participant's time and place of preference.

Figure 1 shows the overall sample sizes, response percentages and measurement period for each measurement.

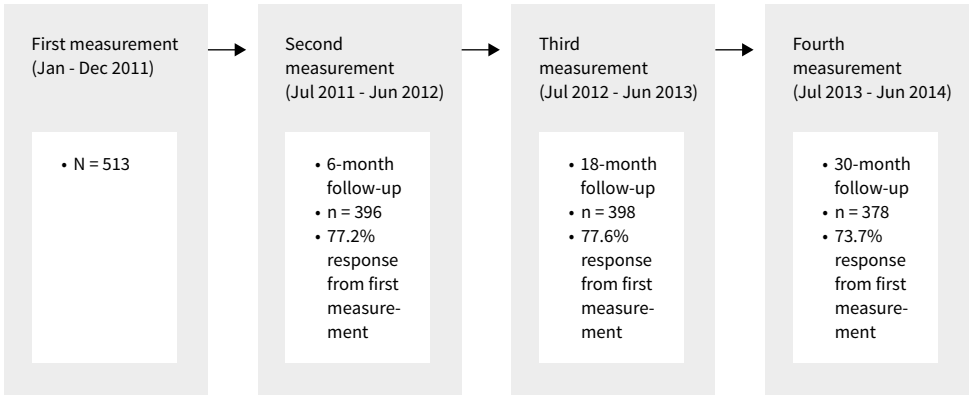


Figure 1 Sample size and response per measurement during the study

For the final measurement, Table 1 shows the differences between responders and non-responders in terms of several baseline characteristics: i.e. adult non-responders were significantly younger than adult responders, when compared with young adult responders, young adult non-responders more often had the lowest education levels (i.e. no education or primary education) and less often had a low education level (e.g. pre-vocational education, basic labour-oriented education) than young adult responders. No selective response was found with respect to the other characteristics measured at baseline.

Table 1 Baseline characteristics of responders versus non-responders at the final measurement for adult respondents and young adult respondents

Baseline characteristics		**Adult responders at final measurement** (*n* range[1] from 303-308)	**Adult non-responders at final measurement** (*n* range from 98-102)	**Young adult responders at final measurement** (*n* range from 66-70)	**Young adult non-responders at final measurement** (*n* range from 32-33)
Gender	Male	78.9%	86.3%	54.3%	72.7%
Age in years	Mean	41.1	38.2 *	20.1	20.2
Ethnicity	First-generation immigrant	49.3%	41.8%	18.2%	34.4%
	Second-generation immigrant	14.6%	20.4%	47.0%	37.5%
Marital status	Never married	64.6%	64.7%	100%	100%
Education level	Lowest	30.6%	43.1%	28.6%	48.5% *
	Low	40.5%	33.3%	65.7%	36.4% *
	Intermediate	18.4%	16.7%	4.3%	15.2%
	High	10.5%	6.9%	1.4%	0%
Physical health complaints	Mean	3.0	2.9%	2.5	2.1
Regular cannabis use		22.8%	26.5%	33.8%	51.5%
Regular alcohol use		14.3%	10.8%	6.0%	15.6%
Somatisation (high level)		37.5%	33.0%	24.3%	27.3%
Depression (high level)		45.5%	56.6%	20.0%	33.3%
Anxiety (high level)		38.2%	35.4%	24.3%	33.3%

* Significant difference at p<0.05 between responders and non-responders.
[1] range of n's is given due to occasional missing data.

Variables measured

Table 2 presents an overview of the variables measured at each follow-up measurement. To achieve the objectives of this study, the study questionnaire covered five main topics: 1) socio-demographics and background; 2) care needs and goals; 3) living situations (including health, work and finances, social relations, criminal activities); 4) housing status and transitions in housing; and 5) quality of life.

Table 2 Measurements at the first (T0), second (T1), third (T2) and fourth (T3) interview

Variable	Instrument	T0	T1	T2	T3
Socio-demographics and background					
Socio-demographic characteristics	Gender, age, ethnicity, education, marital status, parenthood, religious background	x	x	x	x
Suspected intellectual disability	Hayes Ability Screening Index (HASI) (Hayes, 2000)		x		
Difficulties in childhood	[b]	x			
Previous homeless episodes	Number of months homeless ever in life, including current and previous homelessness episodes [a]	x			
Causes of homelessness	[b]	x			
Care needs and goals					
Care needs	Care needs on 22 life domains [b]	x	x	x	x
Service use	Use of services of 17 care providers (e.g. general practitioner, dentist and social services) [b]	x	x	x	x
Working alliance	Working Alliance Inventory – Short (WAI-S) (Tracey & Kokotovic, 1989)		x	x	
Barriers to care	[a]	x			
Health insurance	[a]	x		x	x
Housing preferences	[b]		x	x	x
Motivation for change	Treatment Self-Regulation Questionnaire (TSRQ) (Levesque et al., 2007)		x		
Experiences with individual programme plan	[a]				x
Sources of improvements (self, care provider, social contacts, fate)	[a]		x		x
Personal goals	[a]	x	x	x	
Housing status and transitions in housing					
Current housing status	Lehman's Quality of Life Interview(Lehman, 1988; Wolf, 2007)	x	x	x	x
Housing transitions	Housing transitions since previous measurement [a]	x	x	x	x
Living situation: Health					
Physical health	International Classification of Diseases (ICD)(World Health Organization, 1994)	x		x	x
Psychological distress	Brief Symptom Inventory 18 (BSI-18) (Derogatis, 2001).	x	x	x	x
Substance use (including cigarette smoking)	European version of the Addiction Severity Index (Europ-ASI, version III) (Kokkevi & Hartgers, 1995).	x		x	x
Gambling behaviour	[a]	x		x	x
Substance misuse/dependence	MATE(Schippers, Broekman, & Buchholz, 2007), module 'Substance dependence and abuse'		x		x
Basic psychological needs	Three subscales of the Basic Psychological Needs questionnaire (Ilardi, Leone, And, & Ryan, 2006).	x		x	x
Meaning in life	Three items of Ryff 's Scales of Psychological Well-Being (RPWB) (Ryff, 1989)				x
Living situation: Work and finances	Lehman's Quality of Life Interview (Lehman, 1988; Wolf, 2007)				
Daytime activities	"" ""	x	x	x	x
Income	"" ""	x	x	x	x
Adequacy of finances to cover basic expenditures	"" ""	x	x	x	x
Debts	"" ""	x	x	x	x
Sources of debts	[a]			x	x

Variable	Instrument	T0	T1	T2	T3
Living situation: Social relations					
Social relations (e.g. contact frequency)	Lehman's Quality of Life Interview (Lehman, 1988; Wolf, 2007)	x		x	
Social support (from family, friends partner)	Five items derived from the Medical Outcome Study (MOS) (Sherbourne & Stewart, 1991)	x	x	x	x
Living situation: Criminal activities	Lehman's Quality of Life Interview (Lehman, 1988; Wolf, 2007)				
Arrests, fines	"" ""	x	x	x	x
Detention history	"" ""				x
Quality of life					
Quality of life	Lehman's Quality of Life Interview (Lehman, 1988; Wolf, 2007)	x	x	x	x

[a] Developed for this cohort study
[b] Developed by Impuls – Netherlands Center for Social Care Research on the basis of literature reviews

2.4 Findings to date

This section presents the main findings to date.

Characteristics of the cohort
The majority of the adult and youth participants were male (80% and 60%, respectively) and had a non-native Dutch background (60% and 63%, respectively). At the time of the baseline interview, the average age of the adults was 40 and that of the youth participants was 20. Over 70% of the adults and 91% of the youth participants had a level of education that was low to very low.

Homelessness
At the time of the baseline interview, most of the adults (63%) and the youth participants (56%) were homeless for the first time in their lives. In the six months preceding the baseline interview, many participants had stayed temporarily with family, friends and/or acquaintances. They most frequently reported financial problems, conflicts or breaks in personal relationships, and house evictions as the cause of their homelessness. Among youth participants, house evictions mostly concerned evictions by their parent(s) or caretaker(s) (Van Straaten et al., 2012).

Substance use
Of all participants, 58% reported having used one or more substances in the 30 days prior to the baseline interview, e.g. cannabis, alcohol (≥5 units on one occasion), crack cocaine, ecstasy, cocaine (snorting), amphetamines, methadone or heroin. Participants who had used a substance in the 30 days prior to the baseline interview were significantly younger (36 years) than participants who had not (41 years). Significantly more participants who used a substance were male (85%) compared to those who had not used any substance (60%). Among these homeless people, the substances most frequently used were cannabis (44%) and alcohol (≥5 units on one occasion) (31%). Other substances were used by around ≤ 5% of the participants. Of all participants, 27% was classified as substance misuser and 21% as substance dependent (Van Straaten et al., 2015b).

Suspected intellectual disability
Among this cohort, the prevalence of suspected intellectual disability was 30% (Van Straaten et al., 2014b). A comparison of care needs between participants with and without a suspected intellectual disability in domains such as housing & daily life, finances & daily activities, physical health and mental health revealed that, at the 1.5-year follow-up, participants with a suspected intellectual disability had care needs for a longer period of time than those without a suspected intellectual disability. Especially with regard to the domain 'finances', most participants with a suspected intellectual disability made the transition from an unmet care need to a met care need between baseline and follow-up, whereas participants without a suspected intellectual disability mostly made the transition from an unmet care need to no care need. Also, participants with a suspected intellectual disability more often preferred housing supports available by appointment than those without a suspected intellectual disability (Van Straaten et al., 2015a).

Housing and housing stability
At the time of the fourth measurement (2.5 years after the baseline interview) 57% of the participants were housed. One-third (34%) resided in an institution, of whom roughly half (49%) participated in supported housing. At 2.5 years after they reported to the social relief system, 7% of the participants was marginally housed and 3% was still homeless.

At the fourth measurement, 84% of participants was stably housed in the sense that they had, for a time period of at least 90 days, been housed independently or participated in supported housing (69%), or resided in an institution (15%). Participants who were arrested in the year prior to the first measurement were less often stably housed 2.5 years later than those who had not been arrested. Participants who had many somatic complaints at the first measurement were less often stably housed 2.5 years later than those who did not. In addition, having more unmet care needs at the first measurement was a predictor of being less often stably housed 2.5 years later (Al Shamma et al., 2015).

Quality of life
The quality of life of the participants improved significantly between the baseline interview and the 2.5-year follow-up in several domains: housing, finances, daily activities, mental health, resilience, safety, the

relation with their family, and contact with their children. The largest improvements were reported in the domains of housing and finances.
At the fourth measurement (2.5 years after entering the social relief system), participants were most satisfied with the contact with their children, their resilience, and their safety. They were least satisfied with their financial situation; this corresponds with their debt situation, which showed no significant improvement since baseline. At the 2.5-year follow-up, the mean debt of participants was almost 15,000 Euro.
A high level of somatisation at the first measurement was a predictor of a poorer general quality of life 2.5 years later, whereas experiencing more feelings of relatedness at the first measurement was a predictor of a better general quality of life 2.5 years later (Al Shamma et al., 2015).

Output of the study
Annual reports citing the main results (including an English summary) were published at the request of the Dutch Ministry of Health, Welfare and Sport (Al Shamma et al., 2015; Van der Laan et al., 2013; Van Straaten et al., 2012; Van Straaten et al., 2014a). This cohort study has resulted in four international publications (Van Straaten et al., 2016; Van Straaten et al., 2015a, 2015b; Van Straaten et al., 2014b) and several articles are in preparation.
To enhance policy relevance, we also published the results for each city separately; these results were made available to the relevant policy-makers and care professionals.

Participant panels
Drafts of reports were presented to participant panels, each consisting of about eight formerly homeless people in each of the four cities; their feedback was included in the final version of the reports.
These panels also ensured that the client's perspective was established in this study.
During the meeting with the participant panels in which the results of the fourth measurement were discussed, these formerly homeless people raised the following issues (amongst other items):
- the importance of debt relief and suitable employment in order to get back on track;
- that more continuity in the care system is required, e.g. by appointing one regular care professional;
- the lack of affordable housing, which hampers the attainment of independent housing;
- that extra support should be given to people with a prison record in the transition to independent housing; and
- that more attention should be paid to empowerment to improve the quality of life of homeless people.

2.5 Strengths and limitations of the study

This study is unusual in Europe, in that cohort studies of homeless people on whom follow-up data are specifically collected are relatively scarce. However, there is an emerging international trend in carrying out cohort studies involving homeless people. Also unique to our study is that we collected information via face-to-face interviews rather than conducting a register-based study, which is more frequently done in studies with homeless people (Morrison, 2009; Nielsen, Hjorthøj, Erlangsen, & Nordentoft, 2011; Slockers et al., 2015). Also noteworthy is our relatively long follow-up period of 2.5 years and the high response rate among this group of homeless people. Essential elements in the successful tracking and follow-up of this group were: 1) the collection of extensive contact information for each participant, 2) the use of digital social networks such as Facebook, 3) the use of cash incentives, 4) personal interviews by experienced interviewers, 5) assurances of confidentiality, and 6) the flexibility of the interviewers (Mckenzie et al., 1999; North et al., 2012).

This study provides highly relevant information for both practice and policy. For example, the relevance for policy is reflected in the fact that the results from this study were included in a number of Letters to Parliament regarding social relief. This study also allowed the establishment of a strong and valuable infrastructure for further follow-up and in-depth research.

Some limitations of this study also need to be noted. The first relates to the homeless persons included in the study: i.e. participation was restricted to those individuals who reported to a central access point for social relief. Subgroups not included in this study included undocumented homeless people and homeless people who did not make use of social relief facilities; no reliable data are available on the size of these 'hidden' subgroups. However, because every homeless person must report to a central access point for social relief in order to gain access to social relief facilities, a substantial section of the homeless population is covered by this selection criterion.
A second limitation is the fact that no data are available on the number of potential participants who were initially invited. This is because it was not feasible to systematically collect data on how many potential participants were approached and how many refused to participate; consequently, no initial non-response data are available. However, for comparison purposes, the municipalities involved had access to data on the total group of homeless adults/young adults who had reported at a central access point for social relief in 2011. Comparisons among the study participants showed that adult participants were representative in terms of age and gender, and that young adult participants were representative in terms of age but, in this subgroup, males were overrepresented; this overrepresentation might influence the generalisability of the results.
The third limitation concerns the selective loss to follow-up of participants who were younger (among the adults) or had the lowest education level at baseline (among the young adults). However, loss to follow-up in this study was only around 25%.

Following this vulnerable group of persons for a longer period of time is worthwhile to gain additional insight into their housing situation, functioning and possible re-integration in society over time. Policy-makers in two of the four cities decided to perform follow-up measurements of the participants who live in their city; these follow-up measurements are currently being prepared.

2.6 References

Al Shamma, S., Van Straaten, B., Boersma, S., Rodenburg, G., Van der Laan, J., Van de Mheen, D., & Wolf, J. (2015). *Dakloze mensen in de vier grote steden: veranderingen in 2,5 jaar. Eindrapportage Coda-G4*. Nijmegen/Rotterdam.

Derogatis, L. R. (2001). *Brief Symptom Inventory (BSI)-18. Administration, scoring and procedures manual*. Minneapolis: NCS Pearson, Inc.

Dutch Government and four major cities. (2006). *Strategy Plan for Social Relief*.

Federatie Opvang. (2014). *Factsheet Maatschappelijke Opvang in 2013*. Amersfoort.

Guadagno, R. E., Muscanell, N. L., & Pollio, D. E. (2013). The homeless use Facebook?! Similarities of social network use between college students and homeless young adults. *Computers in Human Behavior*, 29(1), 86–89. doi:10.1016/j.chb.2012.07.019

Hayes, S. (2000). *Hayes Ability Screening Index (HASI) manual. Behavioural sciences in medicine*. Sydney.

Ilardi, B. C., Leone, D., And, T. K., & Ryan, R. M. (2006). Employee and Supervisor Ratings of Motivation: Main Effects and Discrepancies Associated with Job Satisfaction and Adjustment in a Factory Setting. *Journal of Applied Social Psychology*, 23(21), 1789–1805.

Kokkevi, A., & Hartgers, C. (1995). EuropASI: European Adaptation of a Multidimensional Assessment Instrument for Drug and Alcohol Dependence. *European Addiction Research*, 1(4), 208–210. doi:10.1159/000259089

Lehman, A. F. (1988). A quality of life interview for the chronically mentally ill. *Evaluation and Program Planning*. doi:10.1016/0149-7189(88)90033-X

Levesque, C. S., Williams, G. C., Elliot, D., Pickering, M. a., Bodenhamer, B., & Finley, P. J. (2007). Validating the theoretical structure of the Treatment Self-Regulation Questionnaire (TSRQ) across three different health behaviors. *Health Education Research*, 22(5), 691–702. doi:10.1093/her/cyl148

Mckenzie, M., Long, H. L., & Chesney, M. (1999). Tracking and Follow-Up of Marginalized Populations : A Review. *Health Care*, 10(4), 409–429.

Morrison, D. S. (2009). Homelessness as an independent risk factor for mortality: Results from a retrospective cohort study. *International Journal of Epidemiology*, 38(3), 877–883. doi:10.1093/ije/dyp160

Nielsen, S. F., Hjorthøj, C. R., Erlangsen, A., & Nordentoft, M. (2011). Psychiatric disorders and mortality among people in homeless shelters in Denmark: A nationwide register-based cohort study. *The Lancet*, 377(9784), 2205–2214. doi:10.1016/S0140-6736(11)60747-2

North, C. S., Black, M., & Pollio, D. E. (2012). Predictors of successful tracking over time in a homeless population. *Social Work Research*, 36(2), 153–159. doi:10.1093/swr/svs005

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, 57(6), 1069. doi:10.1037/034645

Schippers, G. M., Broekman, T. G., & Buchholz, A. (2007). *MATE 2.0 handleiding & protocol*. Nijmegen: Bureau Beta.

Sherbourne, C. D., & Stewart, A. L. (1991). The Mos Social Support Survey, 32(6), 705–714.

Slockers, M. T., Nusselder, W. J., Looman, C. W. N., Slockers, C. J. T., Krol, L., & van Beeck, E. F. (2015). The effect of local policy actions on mortality among homeless people: a before-after study. *The European Journal of Public Health*, 25(2), 290–292. doi:10.1093/eurpub/cku155

Tracey, T. J., & Kokotovic, A. M. (1989). Factor structure of the Working Alliance Inventory. *Psychological Assessment*, 1, 207–210.

Van der Laan, J., Van Straaten, B., Boersma, S., Schrijvers, C., Van de Mheen, D., & Wolf, J. (2013). *Daklozenprofielen in de vier grote steden en veranderingen in wonen , kwaliteit van leven en hulpbehoeften*. Rotterdam / Nijmegen: IVO en Impuls.

Van Straaten, B., Van der Laan, J., Rodenburg, G., Boersma, S. N., Wolf, J. R. L. M., & Van de Mheen, D. (2016). Dutch homeless people 2.5 years after shelter admission: what are predictors of housing stability and housing satisfaction?. *Health & Social Care in the Community*. doi:10.1111/hsc.12361

Van Straaten, B., Rodenburg, G., Van der Laan, J., Boersma, S. N., Wolf, J. R. L. M., & Van de Mheen, D. (2015a). Self-reported care needs of Dutch homeless people with and without a suspected intellectual disability: a 1.5-year follow-up study. *Health & Social Care in the Community*. doi:10.1111/hsc.12287

Van Straaten, B., Rodenburg, G., Van der Laan, J., Boersma, S., Wolf, J., & Van de Mheen, D. (2015b). Substance use among Dutch homeless people, a follow-up study: Prevalence, pattern and housing status. *European Journal of Public Health*, 26(1), 111-116. doi:10.1093/eurpub/ckv142

Van Straaten, B., Van der Laan, J., Rodenburg, G., Boersma, S., Wolf, J., & Van de Mheen, D. (2014a). *Dakloze mensen in de vier grote steden: veranderingen in leefsituatie, zorggebruik en kwaliteit van leven*. Rotterdam / Nijmegen.

Van Straaten, B., Schrijvers, C. T. M., Van der Laan, J., Boersma, S. N., Rodenburg, G., Wolf, J. R. L. M., & Van de Mheen, D. (2014b). Intellectual Disability among Dutch Homeless People: Prevalence and Related Psychosocial Problems. *PLoS ONE*, 9(1), e86112. doi:10.1371/journal.pone.0086112

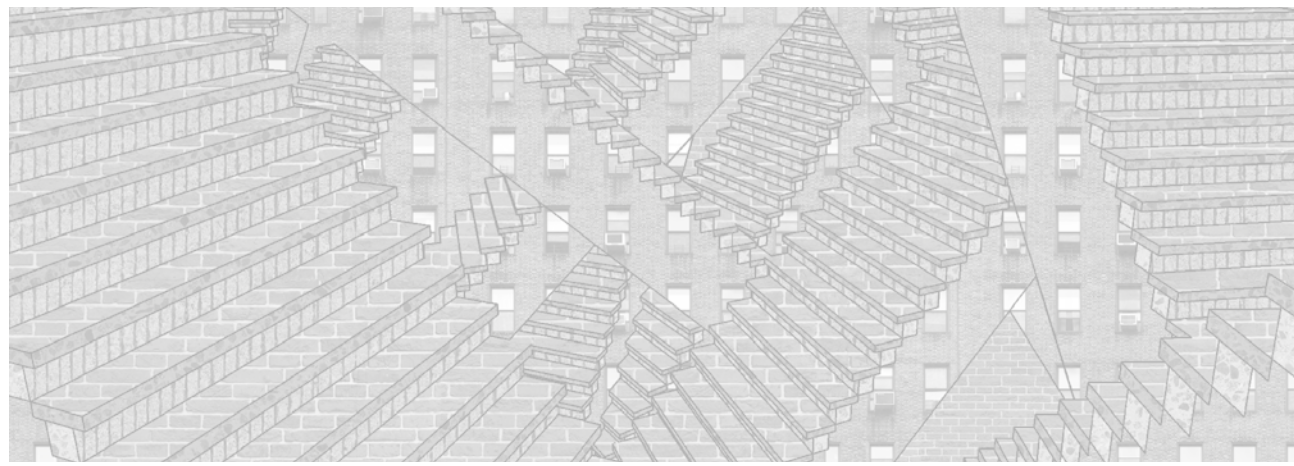
Van Straaten, B., Van der Laan, J., Schrijvers, C., Boersma, S. N., Maas, M., Wolf, J., & Van de Mheen, D. (2012). *Profiel van daklozen in de vier grote steden: resultaten uit de eerste meting van de Cohortstudie naar daklozen in de vier grote steden (Coda-G4*). Rotterdam / Nijmegen.

Wolf, J. (2007). *Nederlandse vertaling van het Quality of Life Instrument (brief version)*. Nijmegen.

World Health Organization. (1994). *International Classification of Diseases (ICD)*.

chapter 3

Substance use among Dutch homeless people, a follow-up study: prevalence, pattern and housing status



Substance use among Dutch homeless people, a follow-up study: prevalence, pattern and housing status

Barbara Van Straaten, Gerda Rodenburg, Jorien Van der Laan, Sandra N. Boersma, Judith R.L.M. Wolf, Dike Van de Mheen

European Journal of Public Health, 2015, 26(1), 111-116.

3.1 Abstract

Background

Previous studies have shown that substance use among homeless people is a prevalent problem that is associated with longer durations of homelessness. Most studies of substance use among the homeless were carried out outside Europe and have limited generalisability to European countries. This study therefore aimed to address the prevalence of substance use among homeless people in the Netherlands, the pattern of their use and the relationship with housing status at follow-up.

Methods

This study included 344 participants (67.1% of the initial cohort) who were followed from baseline to 18 months after the baseline interview. Multinomial logistic regression analyses examined the relationship between substance use and housing status.

Results

The most reported substances which were used among these homeless people were cannabis (43.9%) and alcohol (≥5 units on one occasion) (30.7%). Other substances were used by around 5% or less of the participants. Twenty-seven percent were classified as substance misuser and 20.9% as substance dependent. The odds to be marginally housed (4.14) or institutionalised (2.12) at follow-up compared to being housed of participants who were substance users were significantly higher than those of participants who did not use substances. The odds to be homeless were more than twice as high (2.80) for participants who were substance dependent compared to those who were not.

Conclusion

Homeless people who use substances have a more disadvantageous housing situation at follow-up than homeless people who do not use substances. Attention is needed to prevent and reduce long-term homelessness among substance-using homeless people.

3.2 Introduction

Homeless people's substance use has been characterised as the main mental health problem for homeless people (Fazel, Khosla, Doll, & Geddes, 2008). A review among homeless populations in Western countries reported that alcohol dependence ranges from 8% to 59%, and drug dependence from 5% to 54% (Fazel et al., 2008). A large cohort study among Swedish homeless people found a prevalence of alcohol and drug diagnoses of 42% for men and 41% for women (Beijer & Andréasson, 2010). Substance use among homeless populations has consistently been associated with a number of adverse outcomes, such as premature mortality (Beijer, Andreasson, Agren, & Fugelstad, 2011), symptoms of mental illness (Palepu et al., 2012) and longer durations of homelessness (Aubry, Klodawsky, & Coulombe, 2012; Caton et al., 2005; North, Eyrich-Garg, Pollio, & Thirthalli, 2010; Orwin, Scott, & Arieira, 2005; Patterson, Somers, & Moniruzzaman, 2012; Riley et al., 2007).

However, it is important to note that most recent studies of substance use among homeless people were carried out outside Europe, mostly in the USA (North et al., 2010; Padgett, Stanhope, Henwood, & Stefancic, 2011; Rhoades et al., 2011; Tsai, Kasprow, & Rosenheck, 2014) and Canada (Krausz et al., 2013; Palepu et al., 2012; Strehlau, Torchalla, Kathy, Schuetz, & Krausz, 2012), including most studies evaluating the relationship between substance use and longer durations of homelessness (Aubry et al., 2012; Caton et al., 2005; North et al., 2010; Orwin et al., 2005; Patterson et al., 2012; Riley et al., 2007). Due to factors such as the wide variation in prevalence rates of substance use among homeless populations and differences in drug markets and drug policy, these studies have limited generalisability to European countries. For example, while non-European studies report a relatively high prevalence of crack cocaine use (North et al., 2010; Palepu et al., 2013; Rhoades et al., 2011) and even an increase in crack cocaine use among the homeless over recent decades (North, Eyrich, Pollio, & Spitznagel, 2004; North et al., 2010), cocaine use is now less prevalent among Dutch homeless people (Van Straaten et al., 2012). Recently, it was even shown that the prevalence of cocaine use continues to decline among the general European population (European Monitoring Centre for Drugs and Drug Addiction, 2014). However, there are differences between European countries. Injection of heroin is for example more prevalent in central and eastern European countries (Barrio et al., 2013), while amphetamine is more prevalent in northern and eastern countries (European Monitoring Centre for Drugs and Drug Addiction, 2014)

Although local and up-to-date data about substance use among homeless people are essential for health policy and care, there is a lack of thorough European studies on this issue. This study therefore aimed to address the following questions: (i) What is the prevalence of substance use, substance misuse and dependence among Dutch homeless people who reported to a central access point for social relief in 2011?; (ii) What is their pattern of substance use after they report to the social relief system?; and (iii) Is this pattern related to their housing status at 18-month follow-up?

3.3 Methods

Design and participants

This study is part of a larger observational longitudinal cohort study following homeless people for a period of 2.5 years, starting from the moment they reported to a central access point for social relief in 2011 in one of the four major cities in the Netherlands (Amsterdam, The Hague, Rotterdam and Utrecht). It is obligatory for every homeless person to report to a central access point for social relief in order to gain access to social relief facilities, such as a night shelter.

At baseline, all 513 study participants satisfied the following criteria: aged ≥ 18 years, having legal residence in the Netherlands, residing in the region of application for at least two years during the last three years, having abandoned the home situation, and being unable to hold one's own in society.

The participants, consisting of homeless adults (aged ≥ 23 years) and young adults (aged 18-22 years), were divided over the four cities in accordance with the inflow of homeless people at the central access points for social relief.

We compared the total group of homeless adults and young adults who reported to a central access point for social relief in one of the four cities in 2011, with the study participants. Adult participants (aged ≥ 23 years; *n*=410) were representative in terms of age and gender. Young adult participants (aged 18-22 years; *n*=103) were representative in terms of age but males were overrepresented (60.2% younger males in the cohort vs. 49.2% younger males in the total group).

Of the initial cohort of 513 participants, 344 (67.1%) were also interviewed for the two follow-up measurements. We compared respondents (*n*=344) with non-respondents (*n*=169) on demographic variables and substance use as reported at the first measurement. Compared to respondents, non-respondents were younger (33.1 vs. 37.9 years) and more often had a non-native Dutch ethnicity (72.0% vs. 60.5%). No selective response was found with respect to gender and education. Non-respondents were more often an actual user of cannabis (53.3% vs. 43.6%). No selective response was found with respect to the other substances.

Study procedure at first measurement

At the start of the study in 2011, potential participants were approached at a central access point for social relief or at the temporary accommodation where they stayed. When a potential participant expressed interest in taking part in the study, the researchers contacted that person to explain the study and interview and informed consent procedure. When the participant agreed to participate, a trained interviewer met the participant at the participant's location of choice (generally a shelter facility, public library, or the researcher's office). All participants gave written informed consent. Participants were interviewed face-to-face using a structured questionnaire (mean duration of 1.5 h) and received €15 for participation. The interviews were held in Dutch, English, Spanish or Arabic.

Study procedure at follow-up

Participants were contacted 6 months and 18 months after the first measurement by telephone, e-mail, letter, their social contacts, their caregiver/institution, or private messages via social media. Participants

were interviewed in the same way as during the first measurement, and received €20 for participation on the second interview and €25 for participation on the third interview.

Measurements

Demographic characteristics

Demographic characteristics including gender, age, ethnicity and educational level were assessed. Ethnicity was categorised into 'native Dutch' when the participant and both parents were born in the Netherlands, 'first-generation immigrants' when participants were foreign born, and 'second-generation immigrants' when participants were born in the Netherlands but one or both of their parents were foreign born. Education was categorised as 'lowest' when the participant completed primary education at the most, as 'low' when the participant completed pre-vocational education, lower technical education, assistant training or basic labour-oriented education, as 'intermediate' when the participant completed secondary vocational education, senior general secondary education or pre-university education, and categorised as 'high' when the participant completed higher professional education or university education.

Substance use

We defined substance use as having used one or more of the following substances one time or more in the past 30 days before the interview: Cannabis; Alcohol (≥5 units on one occasion); Crack cocaine; Ecstasy; Cocaine (snorting); Amphetamines; Methadone; Heroin; Other opiates (Morphine, Codeine, Opium); Hallucinogens; Solvents; GHB; Other (e.g. 2-cb, Ketamine).

The number of days alcohol (≥5 units) and the drugs mentioned above were used during the last month were assessed at baseline and at 18-month follow-up using the appropriate module from the European version of the Addiction Severity Index (Europ-ASI, version III) (Kokkevi & Hartgers, 1995). The Europ-ASI is frequently employed in effect studies with homeless people with severe psychiatric and/or substance abuse problems (Kasprow & Rosenheck, 2007; Min, Wong, & Rothbard, 2004; Rosenheck & Dennis, 2001; Rosenheck, Resnick, & Morrissey, 2003).

To investigate the pattern of the overall substance use over 18 months, we constructed four categories of substance use: (i) used at both measurements; (ii) not used at both measurements; (iii) stopped using between measurements and (iv) started between measurements. Six participants had a missing value on substance use at baseline, and were excluded in the construction of these categories of substance use.

Substance misuse and dependence

Substance misuse and dependence were assessed using the Measurements in the Addictions for Triage and Evaluation (MATE) (Schippers, Broekman, & Buchholz, 2007). The MATE is a tool for assessing characteristics of people with drug and/or alcohol problems for triage and evaluation in treatment. The MATE has satisfactory inter-rater reliability (range 0.75-0.92), but less satisfactory test-retest reliability (0.34-0.73) (Schippers, Broekman, Buchholz, Koeter, & van den Brink, 2010).

For the present study one of the 10 original modules of the tool was used: 'Substance dependence and abuse'. This module consists of 11 questions from the Composite International Diagnostic Interview (CIDI) (World Health Organization, 1997), e.g. 'In the past 12 months, did you find you began to need much more [substance] to get the same effect or that the same amount of [substance] had less effect than it once had?'. In accordance with the DSM-IV (American Psychiatric Association, 1994), a participant was classified as 'substance dependent' when he/she had three or more positive answers on the seven dependence items. A participant was classified as 'substance misuser' when he/she had one or more positive answers on the four misuse items. The MATE was assessed at 6-month follow-up.

Housing status

Housing status was assessed by asking the participants where they have slept last night. We categorised these locations into four categories: (i) homeless: emergency shelter or night shelter; transitional accommodation (where the period of stay is intended to be short-term); on the streets or in public spaces. (ii) institutionalised: residential care or supported accommodation (long stay); medical institution, addiction care institution or psychiatric hospital; correctional or penal institution; residential care or supported accommodation. (iii) marginally housed: staying with friends, relatives or acquaintances (temporarily). (iv) independently housed: renting a house, room or apartment or owning one; residing with friends, relatives or acquaintances (permanent). The few participants (<5%) who were housed at baseline (Table 1) had already been accepted for an individual programme plan because of a forthcoming eviction.

Statistical analysis

Descriptive analyses were performed to describe the demographic characteristics and housing status for participants who were a substance user or no substance user at baseline (see Table 1 for results). Relationships between substance use and demographic characteristics were analysed using χ^2tests for categorical data and a t-test for the continuous variable (age).

To analyse changes in the prevalence of substance use between baseline and follow-up non-parametric related samples tests were used. To analyse changes in the mean number of days of substance use between baseline and follow-up paired t-tests were used. Descriptive analyses were performed to describe the percentage of participants who were classified as a substance misuser, as substance dependent and to describe the pattern of substance use.

We used a multinomial logistic regression to analyse the relation between the pattern of substance use and housing status at follow-up. The reference category for this analysis was being independently housed at follow-up (*n*=151). A logistic regression analysis was conducted to investigate the relationship between being classified as substance dependent and housing status at follow-up. All statistical analyses were conducted with IBM SPSS Statistics version 19.

3.4 Results

Characteristics of participants who use substances and those who do not

Of the 338 participants, 57.7% (*n*=195) reported having used one or more substances in the past 30 days before baseline. Participants who had used a substance in the past 30 days before baseline were significantly younger (35.6 years) than participants who had not (41.2 years). Significantly more

participants who used a substance were male (85.1%) compared to participants who had not used (60.1%) (Table 1).

Table 1 Characteristics of participants who use substances or do not use substances in the past 30 days at baseline

Baseline characteristics	Substance use at baseline	No substance use at baseline	*p*
Mean age in years (sd) (*n*=338)	35.6 (12.1)	41.2 (13.8)	**<0.001**
Gender % male (*n*=338)	85.1	60.1	**<0.001**
Housing status % (*n*=337)			n.s.
Independently housed	4.6	4.2	
Marginally housed	12.9	13.3	
Institutionalised	12.9	9.8	
Homeless	69.6	72.7	
Education % (*n*=336)			n.s.
Lowest	32.5	29.6	
Low	46.9	43.7	
Intermediate	15.5	14.1	
High	5.2	12.7	
Ethnicity % (*n*=331)			n.s.
Native Dutch	38.2	42.9	
First-generation immigrant	38.7	40.7	
Second-generation immigrant	23.0	16.4	

p-values in bold indicate a significant difference (p<0.05)

Prevalence per substance at baseline and follow-up

Table 2 shows that cannabis was the most used substance among these homeless individuals at baseline, with a prevalence of 43.9%. Alcohol (≥5 units on one occasion) was used by 30.7% of the participants in the past 30 days before baseline. All other substances, crack cocaine, ecstasy, etc., were used by around 5% or less of the participants.

The percentage of actual users of cannabis and alcohol has declined significantly between baseline and follow-up.

Table 2 Percentage of participants who used a substance (per substance) and no substance in the past 30 days at baseline (T0) and at 18-month follow-up (T2)

Substance	% used in past 30 days, T0 (n) (*n*=338-344)	% used in past 30 days, T2 (n) (*n*=344)
Cannabis (*n*=342)	43.9 (150)	38.4 (132) *
Alcohol (≥5 units) (*n*=342)	30.7 (105)	24.7 (85) *
Crack cocaine (*n*=344)	5.2 (18)	3.5 (12)
Ecstasy (*n*=342)	4.4 (15)	2.6 (9)
Cocaine (*n*=344)	4.1 (14)	4.1 (14)
Amphetamines (*n*=344)	3.8 (13)	2.9 (10)
Methadone (*n*=344)	2.9 (10)	1.2 (4)
Other opiates (*n*=343)	2.3 (8)	2.9 (10)
Heroin (*n*=344)	2.3 (8)	1.2 (4)
Hallucinogens (*n*=344)	1.7 (6)	0.9 (3)
Solvents (*n*=344)	0.6 (2)	0.3 (1)
GHB (*n*=344)	0.6 (2)	0.6 (2)
Other (*n*=344)	0.6 (2)	0.3 (1)
No substance used (*n*=338)	42.3 (143)	45.9 (158)

* p<0.05

Table 3 shows that the mean number of days on which users of cannabis used cannabis did significantly decline from 18.1 days (of 30 days) at baseline to 13.5 days at follow-up. The mean number of days on which users of alcohol used alcohol did significantly decline from 10.7 days at baseline to 4.9 days at follow-up. Also the mean number of days of ecstasy use, cocaine use, amphetamines use and hallucinogens use declined significantly between baseline and follow-up.

Table 3 Mean number of days of substance use in the past 30 days at baseline (T0) and at 18-month follow-up (T2) for participants who used the substance at T0

Substance[1]	*n*	Mean days used at T0 (sd)	Mean days used at T2 (sd)
Cannabis	150	18.1 (11.7)	13.5 (12.8) *
Alcohol (≥5 glasses)	105	10.7 (10.7)	4.9 (8.5) *
Crack cocaine	18	9.1 (9.6)	6.6 (10.6)
Ecstasy	15	1.9 (1.4)	0.10 (0.26) *
Cocaine	14	1.7 (1.3)	0.0 (-) *
Amphetamines	13	11.3 (13.0)	3.4 (8.7) *
Methadone	10	19.9 (13.6)	12.0 (15.5)
Other opiates	8	20.5 (10.6)	7.5 (13.9)
Heroin	8	10.3 (10.7)	4.6 (10.5)
Hallucinogens	6	2.0 (1.3)	0.17 (0.41) *

* p<0.05
[1] No mean number of days of use of solvents, GHB and 'other' are reported due to the small numbers of participants (<5) who used these substances

Substance misuse and dependence
Of the 344 participants, 27.0% (*n*=93) were classified as a substance misuser, and 20.9% (*n*=72) as substance dependent.

The pattern of substance use over 18 months
Figure 1 shows that 44.4% of the participants were actual substance users at both measurements, and 32.5% of the participants were non-users at both measurements. Around ten percent of the participants started using or stopped using between the measurements.

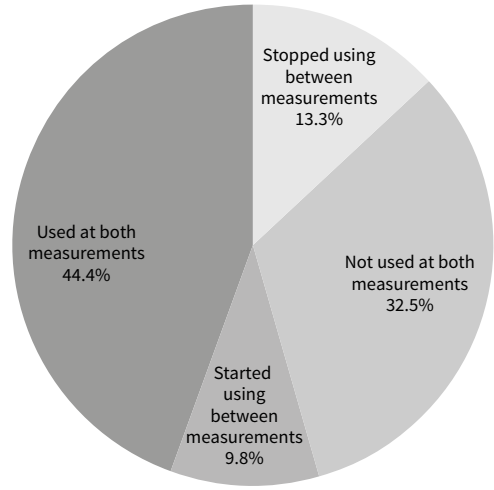


Figure 1 Course of substance use between baseline and 1.5-year follow-up

Relationship between the pattern of substance use and housing status at follow-up
Of the participants, 45.1% were independently housed, 35.8% were institutionalised, 10.7% were still homeless and 8.4% were marginally housed at follow-up (Table 4). The odds of participants who were substance users at both measurements to be marginally housed (4.14) or institutionalised (2.12) compared to being housed were significantly higher than the odds of participants who did not use substances at both measurements (Table 4). The odds of participants who stopped using substances between the measurements to be institutionalised (2.38) compared to being housed was significantly higher than the odds of participants who did not use substances at both measurements (Table 4).
Additionally, we investigated whether being substance dependent was related to housing status at follow-up. The odds to be homeless were more than twice as high for participants who were substance dependent compared to those who were not substance dependent (OR=2.80, CI (95%)=1.26-6.24). Of the participants who were substance dependent, 18.1% were still homeless at 18 months.

Table 4 Relationship between the pattern of substance use and housing status at 18-month follow-up

Pattern of substance use		Independently housed (ref)	Marginally housed	Institutionalised	Homeless
Total (*n*=335)	%	45.1	8.4	35.8	10.7
Used at both measurements (*n*=149)	%	35.6	12.1	38.3	14.1
	OR (95% CI)	1.00	4.14* (1.44-11.92)	2.12* (1.20-3.75)	2.20 (0.97-4.97)
Not used at both measurements (*n*=108)	%	56.5	4.6	28.7	10.2
	OR (95% CI)	1.00	1.00	1.00	1.00
Stopped using between measurements (*n*=45)	%	42.2	4.4	51.1	2.2
	OR (95% CI)	1.00	1.28 (0.23-7.16)	2.38* (1.13-5.02)	0.29 (0.04-2.41)
Started using between measurements (*n*=33)	%	54.5	9.1	27.3	9.1
	OR (95% CI)	1.00	2.03 (0.44-9.34)	0.98 (0.40-2.44)	0.92 (0.23-3.68)

* p<0.05

3.5 Discussion

This study is one of the few recent European studies of substance use among homeless people. It was conducted among a cohort of Dutch homeless people who reported to a central access point for social relief in 2011 and shows that 57.7% of the participants were using one or more substances at baseline. Most of the substance-using participants used cannabis or alcohol; the use of hard drugs was relatively rare (≤5%). Twenty-seven percent of the cohort could be classified as a substance misuser and 20.9% as substance dependent. We also found that participants who were a substance user had a more disadvantageous housing situation at follow-up than those who were not a substance user, which is in line with previous studies in the USA and Canada (Aubry et al., 2012; Caton et al., 2005; North et al., 2010; Orwin et al., 2005; Patterson et al., 2012; Riley et al., 2007). In particular, substance dependent participants were more likely to still be homeless at follow-up than those who were not substance dependent.

It is striking that the prevalence of the use of hard drugs in this cohort was much lower than that reported in studies on homeless populations in the USA, which reported prevalences of cocaine use of around 40% (North et al., 2010; Rhoades et al., 2011). In our cohort, cannabis was the substance used by far the most (by approximately 40% of the participants). While cannabis may be less harmful than hard drugs, probable adverse effects of regular use include dependency, impaired respiratory function, cardiovascular disease and cognitive impairment (Hall & Degenhardt, 2014). In addition, even though substance users in our cohort used hardly any hard drugs, which is in contrast with studies in the USA and Canada, our results regarding the relationship between housing status and substance use were similar (Aubry et al., 2012; Caton et al., 2005; North et al., 2010; Orwin et al., 2005; Patterson et al., 2012; Riley et al., 2007).

The relatively high percentage of non-users (42.3%) might be a typical characteristic of a cohort consisting mainly of 'newly homeless people'; i.e. those who reported to the social relief system in 2011. More than half of them had a total duration of homelessness in their lives of less than one year. This might also explain why the prevalence of alcohol and drugs diagnoses found in a Swedish cohort of homeless people was almost twice as high as we found in our cohort (Beijer & Andréasson, 2010). Due to local and national policy, 'traditional homeless populations', including the more chronically and severely substance dependent homeless people, have been taken off the streets successfully in recent decades in the Netherlands (Barendregt & van de Mheen, 2009; Tuynman & Planije, 2014). Nevertheless, in spite of these efforts, the number of homeless people has risen in recent years: in 2010 there were around 23,000, against over 27,000 in 2012 (Statistics Netherlands, 2013). This emphasises the need for studies on these newly homeless people.

We found that most participants were either a substance user at both measurements or no substance user at both measurements. However, when we investigated the use per substance between baseline and follow-up, we found that the prevalence of cannabis use had declined slightly among this cohort, and that the mean number of days that a substance was used declined for cannabis, alcohol and for some of the hard drugs. This finding may be explained by various factors: for example by the improved housing situation or as a result of addiction treatment. As additional analysis showed, 17.7% of the participants received addiction treatment between baseline and follow-up.

As cannabis use might disrupt goal-directed behaviour (Grace, Floresco, Goto, & Lodge, 2007), planning and decision-making (Crean, Crane, & Mason, 2011), the substance users in our cohort may have more difficulties performing necessary skills to achieve and maintain housing, such as money management and running a household. These factors could contribute to a more disadvantageous housing situation among this group. The social relief system may also have played a role: care-givers may find that substance-using clients are not 'housing ready', and let them stay in institutions for longer than their non-substance-using clients.

A strength of our study was the relatively large sample size of homeless people and the availability of follow-up data with a satisfactory follow-up rate of almost 70%. This follow-up rate is high for a cohort of homeless people. Our results add a European perspective to the substance use of homeless people, which is often lacking in the literature.
However, our study had some limitations. One limitation is related to the subgroup of the population of homeless people that was studied, i.e. only those who reported to a central access point for social relief in 2011 in one of the four major cities in the Netherlands and were accepted for starting an individual

programme plan. As stated above, it is obligatory for every homeless person to report to a central access point for social relief in order to gain access to social relief facilities. Therefore, a substantial part of the homeless population is covered by this selection criterion. Subgroups of homeless people not included in this study were undocumented homeless people, homeless people who do not make use of social relief facilities, and homeless people who reported to the social relief before 2011. Our findings may thus not be representative of these latter subgroups of the Dutch homeless population. Our findings may also not be fully generalisable to the substance use of homeless people in other European countries, as differences in the prevalence of different types of substances between countries have been reported (Barrio et al., 2013; European Monitoring Centre for Drugs and Drug Addiction, 2014).

Another limitation is the selective non-response at follow-up of participants who were cannabis users at baseline. This may have resulted in an underestimation of the prevalence of cannabis use.

Future research should examine the degree to which the findings of this study can be generalised to homeless populations in other parts of Europe. A longer period of follow-up will provide more insight into how their substance use further develops and whether their housing situation eventually improves. An approach focusing on providing homeless people with housing, regardless of their substance use, may be effective to prevent and reduce long-term homelessness among substance-using homeless people (Tsemberis, Gulcur, & Nakae, 2004).

Conclusion

This study has given new insight into the substance use of homeless people and underlines the importance of local and up-to-date data. While the types of substances that are used by these Dutch homeless people differed from those used by homeless populations in North America and other European countries, the more disadvantageous housing situation of the subgroup of homeless people who use substances seems to be a broad international issue. Attention is needed to prevent and reduce long-term homelessness among substance-using homeless people.

3.6 References

American Psychiatric Association. (1994). *Diagnostic and Statistical Manual of Mental Disorders: DSM-IV. 4th ed*. Washington (DC): American Psychiatric Association.

Aubry, T., Klodawsky, F., & Coulombe, D. (2012). Comparing the housing trajectories of different classes within a diverse homeless population. *American Journal of Community Psychology*, 49(1-2), 142–55. doi:10.1007/s10464-011-9444-z

Barendregt, C., & van de Mheen, D. (2009). Then there was silence on the streets. Developments in the street scene of Rotterdam in the last decade. *Drugs: Education, Prevention, and Policy*, 16(6), 497–511. doi:10.3109/09687630903152895

Barrio, G., Montanari, L., Bravo, M. J., Guarita, B., De la Fuente, L., Pulido, J., & Vicente, J. (2013). Trends of heroin use and heroin injection epidemics in Europe: Findings from the EMCDDA treatment demand indicator (TDI). *Journal of Substance Abuse Treatment*, 45(1), 19–30. doi:10.1016/j.jsat.2012.11.002

Beijer, U., & Andréasson, S. (2010). Gender, hospitalization and mental disorders among homeless people compared with the general population in Stockholm. *The European Journal of Public Health*, 20(5), 511–516.

Beijer, U., Andreasson, S., Agren, G., & Fugelstad, A. (2011). Mortality and causes of death among homeless women and men in Stockholm. *Scandinavian Journal of Public Health*, 39(2), 121–7. doi:10.1177/1403494810393554

Caton, C. L. M., Dominguez, B., Schanzer, B., Hasin, D. S., Shrout, P. E., Felix, A., … Hsu, E. (2005). Risk factors for long-term homelessness: findings from a longitudinal study of first-time homeless single adults. *American Journal of Public Health*, 95(10), 1753–9. doi:10.2105/AJPH.2005.063321

Crean, R. D., Crane, N. a, & Mason, B. J. (2011). An evidence based review of acute and long-term effects of cannabis use on executive cognitive functions. *Journal of Addiction Medicine*, 5(1), 1–8. doi:10.1097/ADM.0b013e31820c23fa

European Monitoring Centre for Drugs and Drug Addiction. (2014). *European Drug Report 2014: Trends and developments*. Luxembourg: Publications Office of the European Union.

Fazel, S., Khosla, V., Doll, H., & Geddes, J. (2008). The prevalence of mental disorders among the homeless in western countries: systematic review and meta-regression analysis. *PLoS Medicine*, 5(12), e225. doi:10.1371/journal.pmed.0050225

Grace, A. a, Floresco, S. B., Goto, Y., & Lodge, D. J. (2007). Regulation of firing of dopaminergic neurons and control of goal-directed behaviors. *Trends in Neurosciences*, 30(5), 220–7. doi:10.1016/j.tins.2007.03.003

Hall, W., & Degenhardt, L. (2014). The adverse health effects of chronic cannabis use. *Drug Testing and Analysis*, 6(1-2), 39–45. doi:10.1002/dta.1506

Kasprow, W. J., & Rosenheck, R. A. (2007). Outcomes of critical time intervention case management of homeless veterans after psychiatric hospitalization. *Psychiatric Services (Washington, D.C.)*, 58(7), 929–35. doi:10.1176/appi.ps.58.7.929

Kokkevi, A., & Hartgers, C. (1995). EuropASI: European Adaptation of a Multidimensional Assessment Instrument for Drug and Alcohol Dependence. *European Addiction Research*, 1(4), 208–210. doi:10.1159/000259089

Krausz, R. M., Clarkson, A. F., Strehlau, V., Torchalla, I., Li, K., & Schuetz, C. G. (2013). **Mental disorder, service use, and barriers to care among 500 homeless people in 3 different urban settings.** *Social Psychiatry and Psychiatric Epidemiology*, 48(8), 1235–1243. doi:10.1007/s00127-012-0649-8

Min, S.-Y., Wong, Y. L. I., & Rothbard, A. B. (2004). **Outcomes of Shelter Use Among Homeless Persons With Serious Mental Illness.** *Psychiatric Services*, 55(3), 284–289. doi:10.1176/appi.ps.55.3.284

North, C. S., Eyrich, K. M., Pollio, D. E., & Spitznagel, E. L. (2004). **Are rates of psychiatric disorders in the homeless population changing?** *American Journal of Public Health*, 94(1), 103–8. Retrieved from www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1449834&tool=pmcentrez&rendertype=abstract

North, C. S., Eyrich-Garg, K. M., Pollio, D. E., & Thirthalli, J. (2010). **A prospective study of substance use and housing stability in a homeless population.** *Social Psychiatry and Psychiatric Epidemiology*, 45(11), 1055–62. doi:10.1007/s00127-009-0144-z

Orwin, R. G., Scott, C. K., & Arieira, C. (2005). **Transitions through homelessness and factors that predict them.** *Journal of Substance Abuse Treatment*, 28(2), S23–S39. doi:10.1016/j.jsat.2004.10.011

Padgett, D. K., Stanhope, V., Henwood, B. F., & Stefancic, A. (2011). **Substance use outcomes among homeless clients with serious mental illness: comparing Housing First with Treatment First programs.** *Community Mental Health Journal*, 47(2), 227–32. doi:10.1007/s10597-009-9283-7

Palepu, A., Gadermann, A., Hubley, A. M., Farrell, S., Gogosis, E., Aubry, T., & Hwang, S. W. (2013). **Substance use and access to health care and addiction treatment among homeless and vulnerably housed persons in three Canadian cities.** *PloS One*, 8(10), e75133. doi:10.1371/journal.pone.0075133

Palepu, A., Patterson, M., Strehlau, V., Moniruzzamen, A., de Bibiana, J. T., Frankish, J., … Somers, J. (2012). **Daily Substance Use and Mental Health Symptoms among a Cohort of Homeless Adults in Vancouver, British Columbia.** *Journal of Urban Health : Bulletin of the New York Academy of Medicine*. doi:10.1007/s11524-012-9775-6

Patterson, M. L., Somers, J. M., & Moniruzzaman, A. (2012). **Prolonged and persistent homelessness: multivariable analyses in a cohort experiencing current homelessness and mental illness in Vancouver, British Columbia.** *Mental Health and Substance Use*, 5(2), 85–101. doi:10.1080/17523281.2011.618143

Rhoades, H., Wenzel, S. L., Golinelli, D., Tucker, J. S., Kennedy, D. P., Green, H. D., & Zhou, A. (2011). **The social context of homeless men's substance use.** *Drug and Alcohol Dependence*, 118(2-3), 320–5. doi:10.1016/j.drugalcdep.2011.04.011

Riley, E. D., Weiser, S. D., Sorensen, J. L., Dilworth, S., Cohen, J., & Neilands, T. B. (2007). **Housing patterns and correlates of homelessness differ by gender among individuals using San Francisco free food programs.** *Journal of Urban Health*, 84(3), 415–422. doi:10.1007/s11524-006-9153-3

Rosenheck, R. A., & Dennis, D. (2001). **Time-Limited Assertive Community Treatment for Homeless Persons With Severe Mental Illness.** *Archives of General Psychiatry*, 58(11), 1073–1080. doi:10.1001/archpsyc.58.11.1073

Rosenheck, R. A., Resnick, S. G., & Morrissey, J. P. (2003). **Closing service system gaps for homeless clients with a dual diagnosis: integrated teams and interagency cooperation.** *The Journal of Mental Health Policy and Economics*, 6(2), 77–87. Retrieved from www.ncbi.nlm.nih.gov/pubmed/14578540

Schippers, G. M., Broekman, T. G., & Buchholz, A. (2007). ***MATE 2.0 handleiding & protocol***. Nijmegen: Bureau Beta.

Schippers, G. M., Broekman, T. G., Buchholz, A., Koeter, M. W. J., & van den Brink, W. (2010). **Measurements in the Addictions for Triage and Evaluation (MATE): an instrument based on the World Health Organization family of international classifications.** *Addiction (Abingdon, England)*, 105(5), 862–71. doi:10.1111/j.1360-0443.2009.02889.x

Statistics Netherlands. (2013). **27 thousand homeless in the Netherlands**. Retrieved from www.cbs.nl/en-GB/menu/themas/bevolking/publicaties/artikelen/archief/2013/2013-4016-wm.htm

Strehlau, V., Torchalla, I., Kathy, L., Schuetz, C., & Krausz, M. (2012). **Mental health, concurrent disorders, and health care utilization in homeless women.** *Journal of Psychiatric Practice*, 18(5), 349–60. doi:10.1097/01.pra.0000419819.60505.dc

Tsai, J., Kasprow, W. J., & Rosenheck, R. a. (2014). **Alcohol and drug use disorders among homeless veterans: prevalence and association with supported housing outcomes.** *Addictive Behaviors*, 39(2), 455–60. doi:10.1016/j.addbeh.2013.02.002

Tsemberis, S., Gulcur, L., & Nakae, M. (2004). **Housing First, Consumer Choice, and Harm Reduction for Homeless Individuals With a Dual Diagnosis.** *American Journal of Public Health*, 94(4), 651–656. doi:10.2105/AJPH.94.4.651

Tuynman, M., & Planije, M. (2014). ***"Het kán dus!" Een doorbraak in het Nederlandse dakloosheidsbeleid. Evaluatie Plan van Aanpak maatschappelijke opvang in de vier grote steden, 2006-2014***. Utrecht.

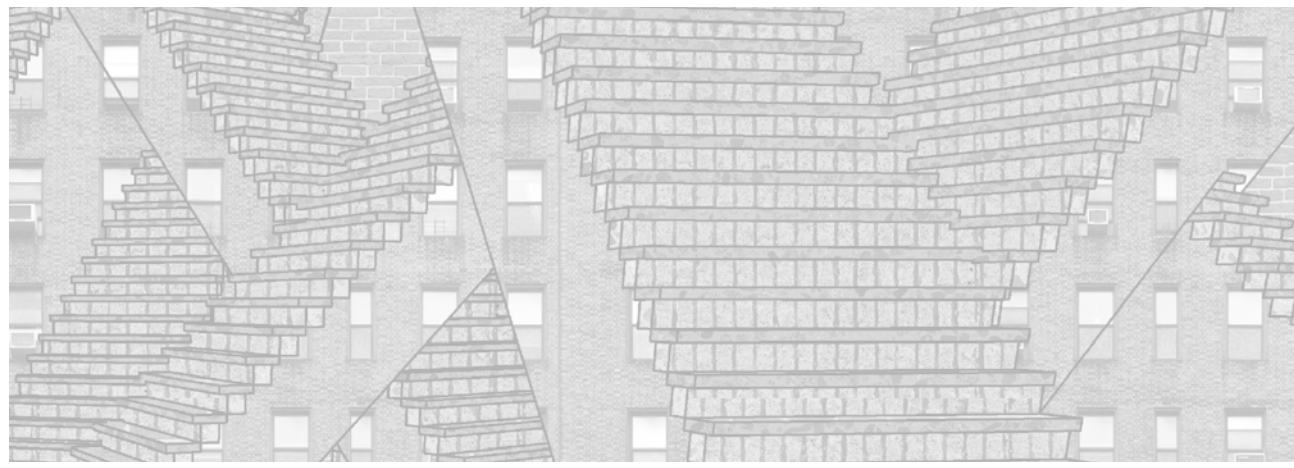
Van Straaten, B., Van der Laan, J., Schrijvers, C., Boersma, S., Maas, M., Wolf, J., & Van de Mheen, D. (2012). ***Profiel van daklozen in de vier grote steden***. Rotterdam / Nijmegen. Retrieved from www.codag4.nl/publicaties

World Health Organization. (1997). ***Composite International Diagnostic Interview (CIDI) Versie 2.1.*** Amsterdam: WHO-CIDI Training en Referentie Centrum. Psychiatrisch Centrum AMC, Amsterdam.

chapter 4

disability

Intellectual disability among Dutch homeless people: prevalence and related psychosocial problems



Intellectual disability among Dutch homeless people: prevalence and related psychosocial problems

Barbara Van Straaten, Carola T.M. Schrijvers, Jorien Van der Laan, Sandra N. Boersma, Gerda Rodenburg, Judith R.L.M. Wolf, Dike Van de Mheen

PLoS ONE, 2014, 9(1): e86112.

4.1 Abstract

Background

There is a higher prevalence of intellectual disability among homeless people than in the general population. However, little is known about the additional psychosocial problems faced by homeless people with an intellectual disability. We describe the prevalence of intellectual disability in a cohort of homeless people in the Netherlands, and report relationships between intellectual disability and psychosocial problems in terms of psychological distress, substance (mis)use and dependence, as well as demographic characteristics in this cohort.

Methods

This cross-sectional study is part of a cohort study among homeless people in the four major cities of the Netherlands. Data were derived from 387 homeless people who were interviewed and screened for intellectual disability six months after the baseline measurement. Multivariate logistic regression analyses and χ^2 tests were performed to analyse relationships between intellectual disability, psychosocial problems and demographic characteristics.

Findings

Of all cohort members, 29.5% had a suspected intellectual disability. Participants with a suspected intellectual disability had a higher mean age, were more likely to be male and to fall in the lowest category of education than participants without a suspected intellectual disability. Having a suspected intellectual disability was related to general psychological distress (OR=1.56, $p<0.05$), somatisation (OR=1.84, $p<0.01$), depression (OR=1.58, $p<0.05$) and substance dependence (OR=1.88, $p<0.05$). No relationships were found between a suspected intellectual disability and anxiety, regular substance use, substance misuse and primary substance of use.

Conclusion

The prevalence of intellectual disability among Dutch homeless people is higher than in the general population, and is related to more psychosocial problems than among homeless people without intellectual disability. Homeless people with a suspected intellectual disability appear to be a vulnerable subgroup

within the homeless population. This endorses the importance of the extra attention required for this subgroup.

4.2 Introduction

Apart from the lack of housing, being homeless is related to a number of additional problems. Studies have shown higher rates of mental health problems and substance use problems among homeless people as compared with the general population (Fazel, Khosla, Doll, & Geddes, 2008). A more recent topic of interest in the field of research on homelessness is the prevalence of (mild) intellectual disability (IQ < 70). A systematic review on cognitive dysfunction in homeless adults shows that 30-40% of homeless adults have a cognitive impairment (Spence, Stevens, & Parks, 2004). In another study, 12% of 50 homeless people met the criteria for intellectual disability (Oakes & Davies, 2008). Compared to the prevalence of intellectual disability in the general Dutch population, which is about 0.7% (Wullink, van Schrojenstein Lantman-de Valk, Dinant, & Metsemakers, 2007), the prevalence reported among homeless populations is (very) high. However, sample sizes in previous studies are relatively small and most included only homeless people living in a specific facility, which can limit the generalisability of these prevalence estimates to other homeless populations. Also, most of the earlier studies were conducted in the USA and the UK, where the occurrence of homelessness and social welfare systems differ substantially from most (other) European countries (Toro et al., 2007).

Apart from the prevalence of intellectual disability in homeless populations, it is highly relevant to study related psychosocial problems among homeless people with an intellectual disability. More insight in the situation of homeless people with an intellectual disability may contribute to the development of services that fit the needs of this specific, and presumably fairly large, subgroup. A study on a general (non-homeless) population with an intellectual disability reported a lower prevalence of alcohol and drug use but a potentially elevated risk of experiencing a substance use disorder among people with intellectual disability (Didden, Embregts, van der Toorn, & Laarhoven, 2009). Also, it was found that (non-homeless) people with an intellectual disability have a higher rate of mental health problems than the general population (Cooper, Smiley, Morrison, Williamson, & Allan, 2007; Deb, Thomas, & Bright, 2001; Smiley, 2005). In a large population-based study, 31.7% of people with an intellectual disability also had a psychiatric disorder (Morgan, Leonard, Bourke, & Jablensky, 2008).

To our knowledge, only one study has described the characteristics and problems of homeless people with an intellectual disability and compared them with homeless people without an intellectual disability (Mercier & Picard, 2011). In that study the proportion of women was higher in the group of homeless people with an intellectual disability, but no differences were found between the two groups with regard to mental health problems and substance abuse. However, these results seem in contrast to earlier reports of more substance-use disorders and mental health problems in general populations with an intellectual disability as compared with those without an intellectual disability. Thus, until now, it remains unclear whether homeless people with an intellectual disability also have additional problems.

The first aim of this study is to examine the prevalence of intellectual disability among Dutch homeless people. We hypothesise that the prevalence of intellectual disability in this group is higher than the 0.7% found in the general Dutch population (Wullink et al., 2007). The second aim is to explore relationships between intellectual disability and psychosocial problems frequently seen in homeless populations: psychological distress and substance (mis)use dependence. This study is part of the 'Cohort study amongst homeless people in Amsterdam, The Hague, Rotterdam and Utrecht', which follows homeless people for a period of 2.5 years from the moment they reported themselves at a central access point for social relief in 2011 in one of the four major cities in the Netherlands (Amsterdam, The Hague, Rotterdam and Utrecht).

4.3 Methods

Ethics statement

The study complies with the criteria for studies which have to be consulted by an accredited Medical Research Ethics Committee (aMREC). Upon consultation, the Medical Review Ethics Committee region Arnhem-Nijmegen concluded that ethical approval was not necessary (Registration number 2010/321). The study was conducted according to the principles expressed in the Code of Conduct for health research with data (federa.org). All participants gave written informed consent.

Design and participants

This cross-sectional study is part of a larger observational longitudinal multi-site cohort study following homeless people for a period of 2.5 years, starting from the moment they reported themselves at a central access point for social relief in 2011 in one of the four major cities in the Netherlands (Amsterdam, The Hague, Rotterdam and Utrecht) and were accepted for an individual programme plan. It is obligatory for every homeless person to report at a central access point for social relief in order to get access to social relief facilities, such as a night shelter. The aim of the cohort study is to determine predictors of an improved quality of life and stable housing among homeless people, and to explore their experiences with a person-oriented approach. This person-oriented approach is part of the Strategy Plan for Social Relief, a Dutch policy aimed at preventing and reducing homelessness, and improving the situation of homeless people, by offering them an individual programme plan. We included the homeless people from the four major cities in the Netherlands because they all work with the same policy regarding homeless people, namely the person-oriented approach, and in order to get a large enough sample size to obtain our research aim.

All 513 study participants satisfied the criteria set by the four major cities in the Netherlands for starting an individual programme plan. These include: being at least 18 years of age, having legal residence in the Netherlands, residing in the region of application for at least two years during the last three years, having abandoned the home situation, and being unable to hold one's own in society. Consequently, other subgroups (such as illegal homeless people) were excluded from this study. The participants, consisting of homeless adults (aged ≥ 23 years) and homeless youth (aged 18-22 years), were divided over the four

cities in accordance with the inflow of homeless people at the central access points for social relief.
We compared the total group of homeless adults and youth who reported themselves at a central access point for social relief in one of the four major cities in the Netherlands in 2011 with the study participants. Adult participants (aged ≥ 23 years; *n*=410) were representative in terms of age and gender. Youth participants (aged 18-22 years; *n*=103) were representative in terms of age, but in this subgroup males were overrepresented (60.2% younger males in the cohort vs. 49.2% younger males in the total group). This constitutes the subgroup of homeless people in the four major cities in the Netherlands who are included in this study.
The cohort study has a follow-up period of 2.5 years. After the baseline interview (T0), participants were interviewed an additional three; after 6 months (T1), after 18 months (T2), and after 36 months (T3). The cross-sectional data in this study are derived from the second interview (T1), which took place between July 2011 and June 2012.

Procedure and study sample at first measurement
At the start of the study in January 2011, potential participants were approached either at a central access point for social relief (one in each city) by an employee of the access point, or at a temporary accommodation where they stayed shortly after entering the social relief system by the researchers or interviewers. Potential participants were informed about the study by means of leaflets, posters and face-to-face information provision. When a potential participant expressed interest in taking part in the study, the researchers contacted that person to explain the aim of the study, the procedure of the interview and including informed consent. When the informed participant agreed to participate in the study on the term explained to them, an interview appointment was scheduled.
A trained interviewer met the participant at the participant's location of choice (most often a shelter facility, public library, or the researcher's office). All participants gave written informed consent. Participants were interviewed face-to-face by using a structured questionnaire (mean duration of 1.5 h) and received €15 (± $19) for their participation. The interviews were held in Dutch, English, Spanish or Arabic.
We anticipated on problems that may occur when using questionnaires designed for the general population among people with an intellectual disability (e.g. acquiescence, not understanding the question, getting tired during the interview). Participants were told at the start of the interview that they could take a break during the interview whenever they wanted to. They were allowed for missing answers in case they did not know what to answer or did not want to answer (a 'don't know' and a 'no answer' option was present and were regarded as missing, as is recommended for the use of questionnaires on people with intellectual disabilities (Finlay & Lyons, 2001)). We presented the questionnaires orally to take into account participants who may have trouble with reading. Also, regarding the questionnaires with a multiple-choice format, we presented cards with the answering categories listed to the participant (for example 'not at all'; 'a little bit', etc.) and we repeated the categories verbally when needed. Also, all interviewers were given an interviewer manual with more easy to understand synonyms for potentially difficult words used in the questionnaire. When in doubt whether a participant did or did not understand the question, interviewers repeated the question or used the synonyms, as suggested in the manual.

Procedure and study sample at second measurement
Participants were contacted for the second measurement 6 months after the first measurement by telephone, e-mail, letter, their social contacts, their caregiver/institution, or private messages via social media. Prior to the baseline interview, they had provided this contact information and had agreed that it could be used to contact them for the second interview. Participants were interviewed in the same way as during the first measurement: face-to-face, with a structured questionnaire (mean duration of 1.5 h), and with the same support options (optional break during the interview, cards with answering categories, etc). The participants received €20 (± $26) for their participation.
Of the initial cohort of 513 participants, 396 (77.2%) were interviewed for the second measurement. We compared them with non-participants (*n*=117; 22.8%) of the second measurement on demographic variables, substance use and psychological distress as reported at the first measurement. Compared with participants, non-participants were more regular users of cannabis (35.0% vs. 25.0%), were on average younger (33.3 years vs. 37.2 years) and more often had primary education only (42.2% vs. 31.6%).
For the purpose of the current study, we excluded participants who did not complete the screener for intellectual disability (*n*=9). Five of them were not screened for intellectual disability because of a language barrier and four participants refused to be screened for intellectual disability. Therefore, the situation of 387 adults and youth is described at the second measurement.

Measurements
Demographic characteristics
Demographic characteristics including gender, age, ethnicity and educational level were assessed. Age was calculated by subtracting the date of birth from the date on which the second measurement took place. Ethnicity was categorised into 'native Dutch' when the participant and both parents were born in the Netherlands, 'first-generation immigrants' when participants were foreign born, and 'second-generation immigrants' when participants were born in the Netherlands but one or both of their parents were foreign born.
Education was categorised as 'lowest' when the participant completed primary education at the most, as 'low' when the participant completed pre-vocational education, lower technical education, assistant training or basic labour-oriented education, as 'intermediate' when the participant completed secondary vocational education, senior general secondary education or pre-university education, and categorised as 'high' when the participant completed higher professional education or university education.

Intellectual disability
To measure a suspected intellectual disability, the Hayes Ability Screening Index (HASI) (Hayes, 2000) was used. The HASI is a brief, individually administered screening index of intellectual abilities. It was initially developed to indicate the possible presence of an intellectual disability among people in contact with the criminal justice system and was designed to be culture-fair. Because it is not a full-scale diagnostic instrument in itself, it only gives an indication of whether a person has an intellectual disability (IQ<70) and whether full-scale diagnostic assessment is recommended.
The index consists of four subtests: background items, backwards spelling, a puzzle and clock drawing, and can be administered in 5-10 min. The HASI shows a significant correlation with other psychometric

tests measuring cognitive ability (0.627 for the Kaufman Brief Intelligence Test (K-BIT), 0.497 for the Vineland Adaptive Behavior Scales (VABS) (Hayes, 2000). A HASI cut-off score of 85 was found to be the optimum for discriminating between participants with and without a suspected intellectual disability, with a sensitivity of 82.4 and specificity of 71.6 (Hayes, 2000). This is the cut-off score we used in this study to distinguish the group 'suspected intellectual disability' (HASI score below 85, corresponding to an IQ<70) and 'no suspected intellectual disability' (HASI score of 85 or more, corresponding to an IQ≥70). We used the Dutch version of the HASI, which was translated and provided by the developers of the HASI.

Psychological distress

The Brief Symptom Inventory 18 (BSI-18) was used to measure psychological distress (Derogatis, 2001). The BSI-18 is a short form consisting of 18 items taken from the Symptom Checklist-90-R (SCL-90-R) (Derogatis, 1994), which correlates highly with the SCL-90-R. The BSI-18 assesses three symptom scales; Somatisation, Depression and Anxiety, and includes a total score as an indication of general psychological distress. The BSI is a frequently used measure to evaluate psychological distress in studies among homeless populations (Ball, Cobb-Richardson, Connolly, Bujosa, & O'neall, 2005; Kashner et al., 2002; McCaskill, Toro, & Wolfe, 1998; Tsemberis, Kent, & Respress, 2012; Weinreb, Buckner, Williams, & Nicholson, 2006). The Dutch translation was used, with (provisional) norm scores for the Dutch population (De Beurs, 2011). We compared the scores of the participants with the norm scores described in the manual for the Dutch community sample, with separate norm scores for men and women, and for different age categories (18-29 years and 30+ years) (De Beurs, 2011). Participants were categorised into two groups: participants with a normal score and participants with an elevated score on the BSI-18. Because norms for t-scores are not available for the Dutch BSI-18 (De Beurs, 2011), participants were categorised as having an elevated score if they scored in the upper 40th percentile on a subscale or on the total score compared with a Dutch community sample. The use of this cut-off point allowed us to maintain statistical power, because by using this cut-off score the two groups were approximately equally divided.
In accordance with the manual instructions, we excluded participants who did not answer all questions that compose a certain subscale score (maximum n=2 per subscale) or the total score (n=3).

Substance use, misuse and dependence

Substance (mis)use and dependence were assessed using the Measurements in the Addictions for Triage and Evaluation (MATE) (Schippers, Broekman, & Buchholz, 2007). The MATE is a measurement tool for assessing characteristics of people with drug and/or alcohol problems for triage and evaluation in treatment. The MATE has satisfactory inter-rater reliability (range 0.75-0.92), but less satisfactory test-retest reliability (0.34-0.73) (Schippers, Broekman, Buchholz, Koeter, & van den Brink, 2010). For the present study only one of the 10 original modules of the tool was used, which is module four: 'Substance dependence and abuse'. This module consists of 11 questions from the Composite International Diagnostic Interview (CIDI) (World Health Organization, 1997). Two examples of those questions are: 'In the past 12 months, did you find you began to need much more [substance] to get the same effect or that the same amount of [substance] had less effect than it once had?' and 'In the past 12 months, has your use of [substance] led to problems with the police?'.

After consultation with the developers of the MATE, we added a screening question to the module to select only those participants who regularly (at least once a week) used a substance in the past 12 months before the interview took place. For statistical purposes we made three categories of primary substance of use: mainly alcohol, mainly cannabis and mainly other substances. The last category consisted of a collection of hard drugs (cocaine, methadone, heroin, XTC, amphetamine), as the use of those substances was too rare for meaningful separate analyses.
The score for dependence was calculated by the sum of positive answers on the first seven items from module four, the score for abuse is calculated by the sum of positive answers on the last four items of module four. In accordance with the DSM-IV (American Psychiatric Association, 1994), a participant was classified as 'substance dependent' when he/she had three or more positive answers on the seven dependence items. A participant was classified as 'substance misuser' when he/she had one or more positive answers on the four misuse items.

Statistical analysis

Descriptive analyses were performed to describe the prevalence of intellectual disability, demographic characteristics, psychological distress, regular substance use, substance misuse, dependency and primary substance of use for the group with and without a suspected intellectual disability. Relationships between intellectual disability and demographic characteristics were analysed using χ^2 tests for categorical data (gender, education, ethnicity) and a t-test for the continuous variable (age). Relationships between intellectual disability and psychological distress were tested using logistic regression. Relationships between intellectual disability and regular substance use, substance misuse, substance dependence and primary substance of use were tested using multivariate logistic regression. In all logistic regression analyses, we controlled for age and gender, except for 'psychological distress' because we used age- and gender-specific percentile scores (see Measurements), which makes additionally adjusting for age and gender superfluous. The results are reported as odds ratios (OR) with 95% confidence intervals (CI) and p-values. The reported p-values are two-sided and level of significance was set at p<0.05. All statistical analyses were conducted with the statistical software package IBM SPSS Statistics version 19.

4.4 Results

Prevalence of a suspected intellectual disability

Of the 387 participants, 114 (29.5%) had a suspected intellectual disability.

Characteristics of participants with and without a suspected intellectual disability

Table 1 presents characteristics of participants with and without a suspected intellectual disability. The mean age of participants with a suspected intellectual disability was significantly higher than that of those without a suspected intellectual disability, and significantly more participants with a suspected intellectual disability were male. The overall χ^2 test indicated a significant relation between a suspected intellectual disability and education level. Participants with a suspected intellectual disability were more

likely to fall in the lowest category of education, and less likely to fall in the low or intermediate category. For ethnicity, no significant difference between participants with and without a suspected intellectual disability was found.

Table 1 Demographic characteristics of participants with and without a suspected intellectual disability

	Suspected ID	No suspected ID	p-value
Mean age in years (sd) (*n*=387)	39.9 (13.0)	36.6 (13.2)	t (385)=-2.294; **p=0.022**
Gender % male (*n*=387)	84.2	71.8	χ^2 (1)=6.693; **p=0.010**
Education % (*n*=384)			χ^2 (3)=21.414; **p<0.001**[a]
Lowest	44.6	25.4	
Low	37.5	50.0	
Intermediate	6.3	17.6	
High	11.6	7.0	
Ethnicity % (*n*=379)			χ^2 (2)=3.037; *p*=0.219
Native Dutch	34.8	39.7	
First-generation immigrant	47.3	37.8	
Second-generation immigrant	17.9	22.5	

p-values in bold indicate a significant difference (p<0.05); ID=intellectual disability; sd=standard deviation
[a] Post-hoc χ^2: Lowest; ID > no ID; χ^2 (1)=13.782, p<0.001, OR=2.27, CIs [1.495-3.766] Low; ID < no ID; χ^2 (1)=4.985, p<0.05, OR=0.60, CI [0.382, 0.941] Intermediate; ID < no ID; χ^2 (1) 8.397, p<0.01, OR=0.31, CI [0.136-0.711]

Relationships between a suspected intellectual disability and psychological distress

Descriptive analyses provided the percentage of elevated scores on psychological distress of participants with and without a suspected intellectual disability; for both groups, the percentage of elevated scores was highest for somatisation (60.2% and 45.1%, respectively). On all subscales and general psychological distress, participants with a suspected intellectual disability had a higher percentage of elevated scores (Table 2). Participants with a suspected intellectual disability had higher odds of having an elevated score on somatisation (OR=1.84, *p*=0.007), depression (OR=1.58, *p*=0.044), and general psychological distress (OR=1.56, *p*=0.049) than participants without a suspected intellectual disability. No significant relation was found between a suspected intellectual disability and elevated anxiety scores.

Table 2 Relationships between suspected intellectual disability and elevated psychological distress scores in homeless people

	Suspected ID	No suspected ID	OR	95% CI	p-value
Somatisation (*n*=386) % elevated somatisation score	60.2	45.1	1.84	1.180-2.878	**0.007**
Depression (*n*=385) % elevated depression score	49.1	38.0	1.58	1.013-2.449	**0.044**
Anxiety (*n*=386) % elevated anxiety score	51.8	42.6	1.44	0.930-2.238	0.101
Total BSI-18 score (*n*=384) % elevated general distress score	57.5	46.5	1.56	1.001-2.427	**0.049**

Note: for each comparison, the no suspected intellectual disability group is the reference group.
p-values in bold indicate a significant relationship (p<0.05) ID=intellectual disability

Relationships between a suspected intellectual disability and substance (mis)use and dependence

Table 3 shows that participants with a suspected intellectual disability had almost two times greater odds of being classified as substance dependent than participants without a suspected intellectual disability (OR=1.88, *p*=0.021). Table 4 shows that regular substance users mainly used alcohol or cannabis. No significant relationships were found between a suspected intellectual disability and regular substance use in the past 12 months, substance misuse (Table 3) and primary substance of use (Table 4).

Table 3 Relationships between suspected intellectual disability and regular substance use, substance misuse and substance dependence in homeless people*

	Suspected ID	No suspected ID	OR	95% CI	p-value
Regular substance use in the past 12 months (%) (*n*=387)	51.8	44.7	1.29	0.812-2.046	0.281
Substance misuse (%) (*n*=386)	31.6	25.7	1.30	0.782-2.146	0.314
Substance dependence (%) (*n*=386)	28.9	18.4	1.88	1.102-3.206	**0.021**

*Multivariate logistic regression analysis adjusted for age and gender
Note: for each comparison, the no suspected ID group is the reference group.
p-values in bold indicate a significant relationship (p<0.05) ID=intellectual disability

Table 4 Relationships between suspected intellectual disability and primary substance of use in homeless people who regularly use substances (*n*=180)*

	Suspected ID	No suspected ID	OR	95% CI	p-value
Mainly alcohol use (%)	55.9	47.9	1.25	0.637-2.467	0.512
Mainly cannabis use (%)	30.5	46.3	0.53	0.251-1.101	0.088
Mainly other substances (%) (1)	13.6	5.8	2.46	0.836-7.247	0.102

*Multivariate logistic regression analysis adjusted for age and gender
(1) Other substances: cocaine (n=12), methadone (n=2), heroin (n=1), XTC (n=1), amphetamine (n=1)
ID=intellectual disability
Note: for each comparison, the no suspected ID group is the reference group

4.5 Discussion

As hypothesised, this study on Dutch homeless people who reported themselves at a central access point for social relief indicates that the prevalence of intellectual disability among homeless people is higher (29.5%) than that of intellectual disability in the general Dutch population (0.7%) (Wullink et al., 2007); this is in line with data from similar prevalence studies on intellectual disability among homeless populations (Oakes & Davies, 2008; Spence et al., 2004). Regarding psychosocial problems, relationships were found between intellectual disability and elevated levels of somatisation, depression and general psychological distress, but not between intellectual disability and elevated levels of anxiety. In addition, homeless people with a suspected intellectual disability are more likely to be substance dependent than homeless people without a suspected intellectual disability, but in general do not report more substance use. These findings are also consistent with other studies among non-homeless populations (Cooper et al., 2007; Didden et al., 2009).

Several biological, psychological, social and developmental factors may account for the higher prevalence rates of psychological distress seen in people with intellectual disability in the general population, as well as in this homeless population (Cooper et al., 2007). International prevalence studies revealed that people with mental illness have significantly higher rates of substance use disorders than the general population (RachBeisel, Scott, & Dixon, 1999). This implies that the higher percentage of homeless people with intellectual disability classified as substance dependent as compared to those without intellectual disability, might be explained by the higher percentage of homeless people with intellectual disability with elevated scores on psychological distress. The elevated scores on psychological distress may (in part) be caused by the more limited coping strategies related to people with intellectual disability (Davis, Judd, & Herrman, 1997). However, as with all cross-sectional studies, cause and effect could not be distinguished.

Anxiety was the only psychological factor for which homeless people with a suspected intellectual disability did not differ from homeless people without a suspected intellectual disability. It was earlier proposed that adults with intellectual disability may be less sensitive to anxiety; more specifically, that panic disorder may be less prevalent in adults with intellectual disability due to lack of the cognitions required to develop panic attacks (McNally, 1991), which may explain this result.

Besides the relationships found between intellectual disability and psychosocial problems, we also found relationships with gender and age. An explanation for the finding that participants with a suspected intellectual disability had a higher mean age, may be that the older participants have more prolonged exposure to stress than the younger participants, which may have negatively influenced their cognitive abilities (McEwen & Sapolsky, 1995). Also, the prolonged use of substances among older participants compared with younger participants may partly explain the higher mean age of participants with intellectual disability. The effect for gender, namely that the percentage of men is higher among those with an intellectual disability than among those without an intellectual disability, might be attributed to differences in substance use related to gender, i.e. males were more often regular substance users than females. In the present population alcohol was the most frequently used substance and heavy use of alcohol is related to poorer performance on cognitive tasks (Green et al., 2010). An earlier study comparing homeless people with and without intellectual disability reported more women in the group of homeless people with intellectual disability as compared to those without; however, this latter finding is likely explained by methodological issues (Mercier & Picard, 2011). In the general adult population with intellectual disability, gender differences are not evident (Leonard & Wen, 2002).

The present study has a number of strengths. First, it is one of the few to investigate relationships between intellectual disability and psychosocial problems among homeless people. In addition, in relation to an investigation of intellectual disability among homeless people, the current sample size is one of the largest to date. Thirdly, we used the HASI (Hayes, 2000), which is a measure originally developed for a vulnerable group (i.e. people in contact with the criminal justice system). The validity of this measure to screen intellectual disability was confirmed in the present study: for example, belonging to the lowest category of education was strongly and significantly related to a suspected intellectual disability. Within the group with a suspected intellectual disability, 44.6% had the lowest level of education whereas in those without a suspected intellectual disability 25.4% had the lowest level of education. Furthermore, the intellectual disability screener was designed to be culture-fair; this factor is important for the present study as 61.7% of our participants were immigrants. Because we found no relationship between a suspected intellectual disability and being an immigrant, this probably confirms the cultural-fairness of the screener.

However, because the intellectual disability screener was designed to be over-inclusive (Hayes, 2000), a relatively large number of false-positives might have occurred. A recent validation study on the Dutch version of the HASI suggested to lower the cut-off score from 85 to 81 to prevent potential unnecessary referrals to care institutions (Barendregt, Van de Mheen, & Wits, 2013). However, for screening in a research setting this drawback is less important. Also, the inclusion of people with borderline intellectual disability (IQ 70-85) as having a suspected IQ (instead of only those with an IQ<70) as a result of over-

inclusiveness is acceptable in the present study, as those people also need to be taken into account within a homeless population.
Another point is that participants might have screened positive on intellectual disability as a result of their substance use. It was earlier suggested that (heavy) substance use is a cause of cognitive impairment (Bolla, Brown, Eldreth, Tate, & Cadet, 2002) which may imply that intellectual disability as a developmental disorder originated before age 18 years (American Association on Intellectual and Developmental Disabilities, 2013) could not be confirmed in some of the present participants. On the other hand, the result of the intellectual disability screener does represent the level at which they are currently functioning, which may have implications for their situation and care needs. In addition, a part of the intellectual disability screener also consists of background questions during the school-age period, e.g. attendance at a special school. These aspects are not likely to be caused by substance use as they reflect the situation in their school-age period. However, full-scale assessment of IQ is a recommended next step in the practice of care after a positive screening result on intellectual disability, to provide efficient and tailored care. Also for future research it would be very informative to administer a full IQ test to gain a more in-depth insight in the relationship between intellectual disability and psychosocial problems and to evaluate possible dose-response relationships.

With regard to psychological distress, we chose a cut-off of the upper 40th percentile on the BSI-18 to distinguish between participants with a normal score and participants with an elevated score. Even though our categorisation of elevated psychological distress is not clinically relevant, this categorisation of people who experience elevated psychological distress can be helpful for professionals working with homeless people as an indication that a person may have psychological problems and may need to be further examined. An interesting topic for further research concerning the relationship between psychological distress and intellectual disability, would be to investigate whether the pattern of this relationship is similar in the homeless population as compared to the non-homeless population.

Another methodological concern is related to the subgroup of the total population of homeless people in the Netherlands that was studied, i.e. only those who reported themselves at a central access point for social relief in 2011 in one of the four major cities in the Netherlands and were accepted for an individual programme plan. As stated before, it is obligatory for every homeless person to report oneself at a central access point for social relief in order to gain access to social relief facilities (such as a night shelter). Therefore, a substantial part of the homeless population is covered when using this selection criterion. Subgroups of homeless people not included in this study were illegal homeless people and homeless people who do not make use of social relief facilities. Therefore, our findings may not be representative of these latter subgroups of the Dutch homeless population. Another issue is the selective non-response of participants with a low level of education and cannabis use. This could have resulted in an under-estimation of the prevalence of intellectual disability and of substance (mis)use and dependence. The amount of this underestimation can however not be calculated. In addition, we relied on self-reports to select participants who regularly used substances, which may have led to an underestimation of consumption of substances. Nevertheless, in the general population self-report measures have shown reasonable levels of reliability and validity when measuring alcohol consumption (Del Boca & Darkes, 2003) and cannabis consumption (Copeland, Swift, Roffman, & Stephens, 2001). Also, it has been suggested that people with intellectual disability are able to provide valid data on substance use (McGillicuddy & Blane, 1999). Although no such studies exist for homeless populations, this allowed us to conclude that self-report is a valid and reliable measure for our purposes. The validity and reliability of using questionnaires designed for the general population among people with intellectual disability might be an issue. However, adequate item reliability and discriminative validity of the BSI-18 could be assumed based on research validating the use of the SCL-90-R among people with intellectual disability (Kellet, Beail, Newman, & Mosley, 1999). Also, other problems may occur using questionnaires designed for the general population among people with intellectual disability (e.g. acquiescence, not understanding the question, getting tired during the interview). We anticipated on these problems in several ways as is described in the Methods section.

Conclusion

To our knowledge this is the first study to explore relationships between intellectual disability and psychosocial problems among homeless people in the Netherlands. The study shows that intellectual disability is indeed a relevant problem among these homeless. It also indicates that intellectual disability screening of homeless people may be an effective method to identify those who are particularly vulnerable in terms of psychosocial problems within a homeless population. In this subgroup, the additional mental health and substance use problems may have implications for care programmes and homeless services, and endorses the importance of the extra attention required for this subgroup. This subgroup may benefit from customised care programmes and specialised housing facilities designed for homeless people with intellectual disability. The relatively large number of homeless people with intellectual disability emphasises that expertise in the field of intellectual disability among professionals working in homeless services is required. Further research on the care needs and service use of homeless people with intellectual disability is needed to improve the living situation of one of the most vulnerable groups in society.

4.6 References

American Association on Intellectual and Developmental Disabilities. (2013). **Definition of Intellectual Disability**. Retrieved from www.aaidd.org/content_100.cfm

American Psychiatric Association. (1994). ***Diagnostic and Statistical Manual of Mental Disorders: DSM-IV. 4th ed***. Washington (DC): American Psychiatric Association.

Ball, S. A., Cobb-Richardson, P., Connolly, A. J., Bujosa, C. T., & O'neall, T. W. (2005). **Substance abuse and personality disorders in homeless drop-in center clients: symptom severity and psychotherapy retention in a randomized clinical trial.** *Comprehensive Psychiatry*, 46(5), 371–9. doi:10.1016/j.comppsych.2004.11.003

Barendregt, C., Van de Mheen, D., & Wits, E. (2013). ***Screenen op middelengebruik en psychische klachten in de maatschappelijke opvang. Zes screeners gevalideerd en getest op bruikbaarheid***. Rotterdam.

Bolla, K. I., Brown, K., Eldreth, D., Tate, K., & Cadet, J. L. (2002). **Dose-related neurocognitive effects of marijuana use.** *Neurology*, 59(9), 1337–43. Retrieved from www.ncbi.nlm.nih.gov/pubmed/12427880

Cooper, S.-A., Smiley, E., Morrison, J., Williamson, A., & Allan, L. (2007). **Mental ill-health in adults with intellectual disabilities: prevalence and associated factors.** *The British Journal of Psychiatry: The Journal of Mental Science*, 190, 27–35. doi:10.1192/bjp.bp.106.022483

Copeland, J., Swift, W., Roffman, R., & Stephens, R. (2001). **A randomized controlled trial of brief cognitive-behavioral interventions for cannabis use disorder.** *Journal of Substance Abuse Treatment*, 21(2), 55–64; discussion 65–6. Retrieved from www.ncbi.nlm.nih.gov/pubmed/11551733

Davis, J. P., Judd, F. K., & Herrman, H. (1997). **Depression in adults with intellectual disability. Part 1: A review.** *The Australian and New Zealand Journal of Psychiatry*, 31(2), 232–42. Retrieved from www.ncbi.nlm.nih.gov/pubmed/9140631

De Beurs, E. (2011). ***Brief Symptom Inventory 18 -BSI 18- Handleiding herziene editie***. Leiden: PITS.

Deb, S., Thomas, M., & Bright, C. (2001). **Mental disorder in adults with intellectual disability. 1: Prevalence of functional psychiatric illness among a community-based population aged between 16 and 64 years.** *Journal of Intellectual Disability Research: JIDR*, 45(Pt 6), 495–505. Retrieved from www.ncbi.nlm.nih.gov/pubmed/11737536

Del Boca, F. K., & Darkes, J. (2003). **The validity of self-reports of alcohol consumption: state of the science and challenges for research.** *Addiction (Abingdon, England)*, *98 Suppl* 2, 1–12. Retrieved from www.ncbi.nlm.nih.gov/pubmed/14984237

Derogatis, L. R. (1994). ***Symptom Checklist-90-R (SCL-90-R): Administration, Scoring, and Procedures Manual. 3rd ed***. Minneapolis: Minn: National Computer Systems.

Derogatis, L. R. (2001). ***Brief Symptom Inventory (BSI)-18. Administration, scoring and procedures manual***. Minneapolis: NCS Pearson, Inc.

Didden, R., Embregts, P., van der Toorn, M., & Laarhoven, N. (2009). **Substance abuse, coping strategies, adaptive skills and behavioral and emotional problems in clients with mild to borderline intellectual disability admitted to a treatment facility: a pilot study.** *Research in Developmental Disabilities*, 30(5), 927–32. doi:10.1016/j.ridd.2009.01.002

Fazel, S., Khosla, V., Doll, H., & Geddes, J. (2008). **The prevalence of mental disorders among the homeless in western countries: systematic review and meta-regression analysis.** *PLoS Medicine*, 5(12), e225. doi:10.1371/journal.pmed.0050225

Finlay, W. M. L., & Lyons, E. (2001). **Methodological Issues in Interviewing and Using Self-Report Questionnaires With People With Mental Retardation.** *Psychological Assessment*, 13(3), 319–335.

Green, A., Garrick, T., Sheedy, D., Blake, H., Shores, E. A., & Harper, C. (2010). **The effect of moderate to heavy alcohol consumption on neuropsychological performance as measured by the repeatable battery for the assessment of neuropsychological status.** *Alcoholism, Clinical and Experimental Research*, 34(3), 443–50. doi:10.1111/j.1530-0277.2009.01108.x

Hayes, S. (2000). ***Hayes Ability Screening Index (HASI) manual. Behavioural sciences in medicine***. Sydney.

Kashner, T. M., Rosenheck, R., Campinell, A. B., Surís, A., Crandall, R., Garfield, N. J., … Wicker, A. (2002). **Impact of Work Therapy on Health Status Among Homeless, Substance-Dependent Veterans. A Randomized Controlled Trial.** *Archives of General Psychiatry*, 59(10), 938. doi:10.1001/archpsyc.59.10.938

Kellet, S. C., Beail, N., Newman, D. W., & Mosley, E. (1999). **Indexing Psychological Distress in People with an Intellectual Disability: Use of the Symptom Checklist-90-R.** *J Appl Res Intellect Disabil*, 12(4), 323–334.

Leonard, H., & Wen, X. (2002). **The epidemiology of mental retardation: challenges and opportunities in the new millennium.** *Mental Retardation and Developmental Disabilities Research Reviews*, 8(3), 117–34. doi:10.1002/mrdd.10031

McCaskill, P. A., Toro, P. A., & Wolfe, S. M. (1998). **Homeless and matched housed adolescents: a comparative study of psychopathology.** *Journal of Clinical Child Psychology*, 27(3), 306–19. doi:10.1207/s15374424jccp2703_7

McEwen, B. S., & Sapolsky, R. M. (1995). **Stress and cognitive function.** *Curr Opin Neurobiol*, 5(2), 205–216. doi:10.1016/0959-4388(95)80028-X

McGillicuddy, N. B., & Blane, H. T. (1999). **Substance use in individuals with mental retardation.** *Addictive Behaviors*, 24(6), 869–78. Retrieved from www.ncbi.nlm.nih.gov/pubmed/10628519

McNally, R. J. (1991). ***Anxiety and phobia. In: Handbook of Mental Retardation (eds J. L. Matson & J. A. Mulick)***, pp. 413–23. New York: Pergamon.

Mercier, C., & Picard, S. (2011). **Intellectual disability and homelessness.** *Journal of Intellectual Disability Research: JIDR*, 55(4), 441–9. doi:10.1111/j.1365-2788.2010.01366.x

Morgan, V. A., Leonard, H., Bourke, J., & Jablensky, A. (2008). **Intellectual disability co-occurring with schizophrenia and other psychiatric illness: population-based study.** *The British Journal of Psychiatry: The Journal of Mental Science*, 193(5), 364–72. doi:10.1192/bjp.bp.107.044461

Oakes, P. M., & Davies, R. C. (2008). **Intellectual disability in homeless adults: a prevalence study.** *J Intellect Disabil*, 12(4), 325–34. doi:10.1177/1744629508100496

RachBeisel, J., Scott, J., & Dixon, L. (1999). **Co-occurring severe mental illness and substance use disorders: a review of recent research.** *Psychiatric Services (Washington, D.C.)*, 50(11), 1427–34.

Schippers, G. M., Broekman, T. G., & Buchholz, A. (2007). ***MATE 2.0 handleiding & protocol***. Nijmegen: Bureau Beta.

Schippers, G. M., Broekman, T. G., Buchholz, A., Koeter, M. W. J., & van den Brink, W. (2010). **Measurements in the Addictions for Triage and Evaluation (MATE): an instrument based on the World Health Organization family of international classifications.** *Addiction (Abingdon, England)*, 105(5), 862–71. doi:10.1111/j.1360-0443.2009.02889.x

Smiley, E. (2005). Epidemiology of mental health problems in adults with learning disability: an update. *Adv Psychiatr Treat*, 11(3), 214–222. doi:10.1192/apt.11.3.214

Spence, S., Stevens, R., & Parks, R. (2004). Cognitive dysfunction in homeless adults: a systematic review. *Journal of the Royal Society of Medicine*, 97(8), 375–9. doi:10.1258/jrsm.97.8.375

Toro, P. A., Tompsett, C. J., Lombardo, S., Philippot, P., Nachtergael, H., Galand, B., … Harvey, K. (2007). Homelessness in Europe and the United States: A Comparison of Prevalence and Public Opinion. *J Soc Issues*, 63(3), 505–524. doi:10.1111/j.1540-4560.2007.00521.x

Tsemberis, S., Kent, D., & Respress, C. (2012). Housing stability and recovery among chronically homeless persons with co-occuring disorders in Washington, DC. *American Journal of Public Health*, 102(1), 13–6. doi:10.2105/AJPH.2011.300320

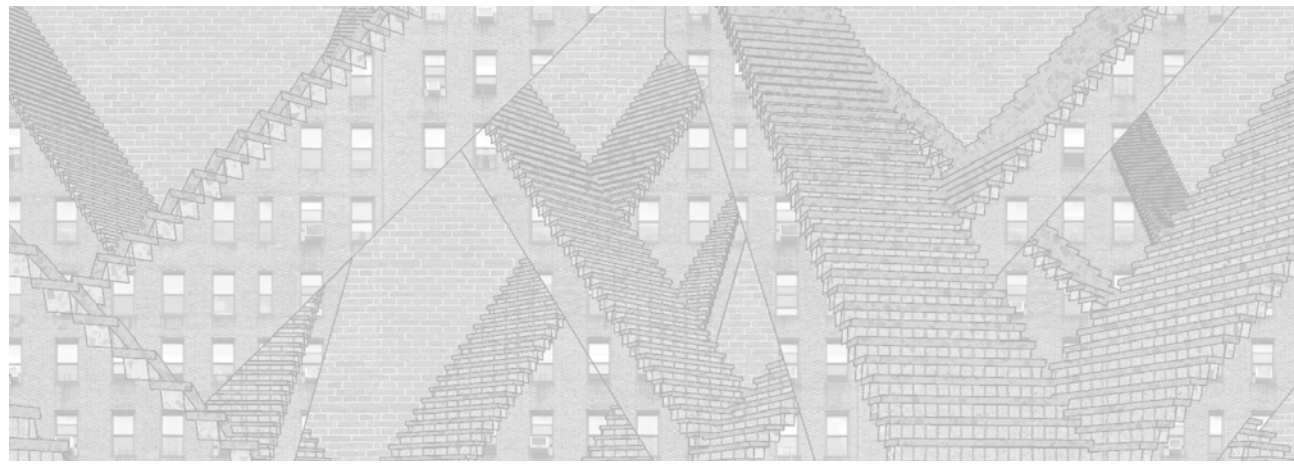
Weinreb, L. F., Buckner, J. C., Williams, V., & Nicholson, J. (2006). A comparison of the health and mental health status of homeless mothers in Worcester, Mass: 1993 and 2003. *American Journal of Public Health*, 96(8), 1444–8. doi:10.2105/AJPH.2005.069310

World Health Organization. (1997). *Composite International Diagnostic Interview (CIDI) Versie 2.1.* Amsterdam: WHO-CIDI Training en Referentie Centrum. Psychiatrisch Centrum AMC, Amsterdam.

Wullink, M., van Schrojenstein Lantman-de Valk, H. M. J., Dinant, G. J., & Metsemakers, J. F. M. (2007). Prevalence of people with intellectual disability in the Netherlands. *Journal of Intellectual Disability Research: JIDR*, 51(Pt 7), 511–9. doi:10.1111/j.1365-2788.2006.00917.x

chapter 5

Self-reported care needs of Dutch homeless people with and without a suspected intellectual disability: a 1.5-year follow-up study



Self-reported care needs of Dutch homeless people with and without a suspected intellectual disability: a 1.5-year follow-up study

Barbara Van Straaten, Gerda Rodenburg, Jorien Van der Laan, Sandra N. Boersma, Judith R.L.M. Wolf, Dike Van de Mheen

Health and Social Care in the Community, 2015, (Epub ahead of print).

5.1 Abstract

Cognitive impairment is a prevalent problem among the homeless and seems related to more psychosocial problems. However, little is known about the care needs of the subgroup of homeless people with an intellectual disability compared to those without an intellectual disability and how their care needs develop over time. This study explores self-reported care needs within a broad range of life domains among Dutch homeless people with and without a suspected intellectual disability to gain insight into the transition of self-reported care needs from baseline to follow-up in both subgroups. This longitudinal study is part of a cohort study among homeless people who had been accepted for an individual programme plan in the four major Dutch cities. The initial cohort consisted of 513 participants who were interviewed in 2011. At 1.5-year follow-up, 336 participants (65.5%) were also interviewed and screened for intellectual disability. Of these participants, 31% (95% CI 26.2 to 36.1%) had a suspected intellectual disability. For both groups, between baseline and follow-up the number of 'unmet care needs' decreased significantly and the number of 'no care needs' increased significantly, while at follow-up, participants with a suspected intellectual disability reported 'no care needs' on significantly fewer life domains than those without a suspected intellectual disability (mean numbers 16.4 v 17.5). Between baseline and follow-up, 'met care needs' decreased significantly on housing for both groups, and increased on finances and dental care for participants with a suspected intellectual disability. At follow-up, participants with a suspected intellectual disability more often preferred housing support available by appointment than those without a suspected intellectual disability. These findings suggest that homeless people who had been accepted for an individual programme plan with a suspected intellectual disability have care needs for a longer period of time than those without a suspected intellectual disability. Providing care to homeless people with a suspected intellectual disability might require ongoing care and support, also after exiting homelessness. Support services should take this into account when considering their care provision and planning of services.

5.2 Introduction

Cognitive impairment is a prevalent problem among homeless people and is receiving increased attention. A review on cognitive function in homeless adults showed that 30%-40% of homeless adults have a cognitive impairment (Spence, Stevens, & Parks, 2004). Within a cohort of homeless people in the Netherlands, around 30% had a suspected intellectual disability (Van Straaten et al., 2014). However, little is known about the care needs of this relatively large subgroup within the homeless population.

Among homeless people in general, a well-explored area is service use and care needs. Homelessness is associated with higher rates of mental health problems, substance use problems (Fazel, Khosla, Doll, & Geddes, 2008) and medical problems (Hwang, 2001); moreover, unmet care needs and underutilisation of services are reported (Baggett, O'Connell, Singer, & Rigotti, 2010; Krausz et al., 2013; Palepu et al., 2013). Research on intellectual disability also focuses on health disparities and unmet healthcare needs of people with an intellectual disability compared to the general population (Krahn, Hammond, & Turner, 2006). For example, psychiatric conditions of persons with an intellectual disability are not always adequately addressed (Lewis, Lewis, Leake, King, & Lindemann, 2002). Also, in a population of homeless people, those with a suspected intellectual disability are reported to have more psychosocial problems in terms of psychological distress and substance dependency than those without a suspected intellectual disability (Van Straaten et al., 2014); all this implies greater care needs for this subgroup.

Because of the unmet care needs among people with an intellectual disability and the increased psychosocial problems of homeless people with a suspected intellectual disability, more insight is needed in the care needs of homeless people with a suspected intellectual disability. Moreover, in addition to (mental) healthcare needs, a broader range of care needs should be examined, including (amongst others) housing, finances, basic skills (i.e. reading, writing), empowerment and social contacts, because fulfilling care needs for these life domains might enable homeless people to better participate in the community. This will also enable us to present a more comprehensive overview of the care needs of homeless people with and without a suspected intellectual disability, because most reports on care needs among the homeless have focused mainly on (unmet) healthcare needs (Baggett et al., 2010; Desai & Rosenheck, 2005; Kertesz et al., 2014).

The present study adds a longitudinal component by reporting the care needs of homeless people in the Netherlands with and without a suspected intellectual disability, at the time they reported to the social relief system and at 1.5 years later. The follow-up measurement allowed us to explore changes and transitions of care needs of the homeless over time, and examine whether these patterns differ between homeless people with and without a suspected intellectual disability.

To our knowledge, no longitudinal study has compared the self-reported care needs of homeless people with and without a suspected intellectual disability. With regard to homeless people with and without a suspected intellectual disability, this study aims to 1) report the number of life domains with an 'unmet care need', with a 'met care need', and with 'no care need' at baseline and at follow-up; 2) explore the specific life domains in which care needs are reported and the extent to which needs were met at baseline and at follow-up; 3) provide insight into the transitions of 'unmet care needs' from baseline to follow-up on the five domains with the highest reported 'unmet care needs'; and 4) explore the relationship between a suspected intellectual disability and housing support needs.

Understanding of the similarities and differences in the care needs of subgroups of the homeless is essential for organising services and improving the quality of life of homeless people. This study may help to develop care programmes which fit the self-reported care needs of homeless people in general and, in particular, of those who are more vulnerable due to an intellectual disability.

5.3 Methods

Ethics Statement

This study complies with the criteria for studies which have to be reviewed by an accredited Medical Research Ethics Committee (aMREC). Upon consultation the Medical Review Ethics Committee region Arnhem-Nijmegen concluded that the study was exempt from formal review (registration number 2010/321). The study was conducted according to the principles expressed in the Code of Conduct for health research with data (federa.org). All participants were aged ≥ 18 years and gave written informed consent.

Design and participants

This study is part of a larger observational longitudinal multi-site cohort study following homeless people for a period of 2.5 years, starting from the moment they reported themselves at a central access point for social relief in 2011 in one of the four major cities in the Netherlands (Amsterdam, The Hague, Rotterdam and Utrecht) and were accepted for an individual programme plan. The main aim of the study was to determine predictors of an improved quality of life and stable housing among homeless people, and to explore their experiences with an individual programme plan. More than 500 homeless people were included in this study to maintain adequate statistical power to achieve the main aim, even with a drop-out rate of around 30%. In the Netherlands, it is obligatory for every homeless person to report at a central access point for social relief in order to gain access to social relief facilities, such as a night shelter. After accepting an individual programme plan, the delivery of care and the supply of living accommodation are provided by local care agencies. The municipalities act as policy co-ordinators and case managers are responsible for monitoring the execution of the individual programme plan.

At baseline, all study participants satisfied the criteria set by the four major Dutch cities at that time for starting an individual programme plan. These include: aged ≥ 18 years, having legal residence in the Netherlands, residing in the region of application for at least two years during the last three years, having abandoned the home situation, and being unable to hold one's own in society.
The participants, consisting of homeless adults (aged ≥ 23 years) and young adults (aged 18-22 years), were divided over the four cities in accordance with the inflow of homeless people at the central access points for social relief.

No data were available on how many potential participants were approached and how many refused to participate. Therefore, in order to obtain information about the representativeness of the study participants, we compared the total population of homeless adults and young adults who reported themselves at a central access point for social relief in the four major cities in 2011, with the study participants, on age and gender.

Study procedure at first measurement

At the start of the study in January 2011, potential participants were approached either at a central access point for social relief (one in each city) by an employee of the access point, or at a temporary accommodation where they stayed shortly after entering the social relief system, by the researchers or interviewers. Potential participants were informed about the study by means of leaflets, posters and face-to-face information provision. When a potential participant expressed interest in taking part in the study, the researchers contacted that person to explain the study aims, the interview procedure, and the informed consent. When the participant then agreed to participate based on the terms explained to them, an interview appointment was scheduled.

A trained interviewer met the participant at the participant's location of choice (generally a shelter facility, public library, or the researcher's office). All participants gave written informed consent. Participants were interviewed face-to-face using a structured questionnaire (mean duration of 1.5 h) and received €15 (± $19) for their participation. The interviews were held in Dutch, English, Spanish or Arabic.

We anticipated problems that may occur when using questionnaires designed for the general population among people with an intellectual disability (e.g. acquiescence, not understanding the question, getting tired during the interview). Participants were told at the start of the interview that they could take a break during the interview whenever they wanted to. Also, they were allowed to have missing answers in case they did not know what to answer or did not want to answer ('Don't know' and 'No answer' options were available and were regarded as missing answers); this procedure is recommended for the use of questionnaires among people with an intellectual disability (Finlay & Lyons, 2001). We presented the questionnaires orally to take into consideration participants who may have trouble with reading.

Study procedure at follow-up measurements

Participants were contacted for the second measurement 6 months after the first measurement (T1) and for the third measurement 18 months after the first interview (T2) by telephone, e-mail, letter, their social contacts, their caregiver/institution, or private messages via social media. Participants were interviewed in the same way as during the first measurement, i.e. face-to-face, with a structured questionnaire (mean duration of 1.5 h), and with the same support options (optional break during the interview, cards with answering categories, etc.). The participants received €20 (± $28) for participation on the second interview and €25 (± $34) for participation on the third interview.

We compared respondents with non-respondents on demographic variables (age, gender, education, ethnicity) as reported at the first measurement and on results of the intellectual disability screener to asses potential selective drop-out.

Measurements

Demographic characteristics

Demographic characteristics including gender, age, ethnicity and educational level were assessed. Ethnicity was categorised into 'native Dutch' when the participant and both parents were born in the Netherlands, 'first-generation immigrant' when participants were foreign born, and 'second-generation immigrant' when participants were born in the Netherlands but one or both of their parents were foreign born. Education was categorised as 'lowest' when the participant completed primary education at the most, as 'low' when the participant completed pre-vocational education, lower technical education, assistant training or basic labour-oriented education, as 'intermediate' when the participant completed secondary vocational education, senior general secondary education or pre-university education, and categorised as 'high' when the participant completed higher professional education or university education.

Housing status

Housing status was assessed by asking the participants where they slept the previous night. These locations were then divided into four categories: 1) Homeless: staying in an emergency shelter or night shelter; residing in transitional accommodation (where the period of stay is intended to be short term); living rough, i.e. living on the streets or in public spaces; 2) Institutionalised: residential care or supported accommodation; staying in a medical institution, addiction care institution or psychiatric hospital; staying in a correctional or penal institution; living in residential care or supported accommodation for people with mental health or substance abuse problems; 3) Marginally housed: staying with friends, relatives or acquaintances (temporarily); and 4) Independently housed: renting a house, room or apartment or owning one; residing with friends, relatives or acquaintances (permanent). The few participants who were housed at baseline (see Table 1) had already been accepted for an individual programme plan because of a forthcoming eviction.

Service use

Service use was assessed using a questionnaire developed by Impuls - Netherlands Center for Social Care Research (Lako et al., 2013) that assesses whether participants have used different types of services during the last six months. Data were collected on the use of medical care, mental health care, and housing assistance during the past six months.

Suspected intellectual disability

To measure a suspected intellectual disability, the Hayes Ability Screening Index (HASI) (Hayes, 2000) was used. The HASI is a brief, individually administered screening index of intellectual abilities. It was initially developed to indicate the possible presence of an intellectual disability among people in contact with the criminal justice system and was designed to be culture-fair. Because it is not a full-scale diagnostic instrument in itself, it only gives an indication of whether a person has an intellectual disability (IQ < 70) and whether full-scale diagnostic assessment is recommended. Only after a full-scale diagnostic assessment, including intellectual functioning, concurrent deficits in adaptive behaviour and manifestations before the age of 18 years (Schalock et al. 2010), can a diagnosis of intellectual disability be made. Therefore, in the present study we used the term 'suspected intellectual disability' to clarify that we can only indicate that there might be an intellectual disability.

The index consists of four subtests: background items, backwards spelling, a puzzle and clock drawing, and can be administered in 5-10 min. The HASI shows a significant correlation with other psychometric tests measuring cognitive ability (0.627 for the Kaufman Brief Intelligence Test (K-BIT), and 0.497 for the Vineland Adaptive Behavior Scales (VABS) (Hayes, 2000). A HASI cut-off score of 85 was found to be the optimum for discriminating between participants with and without a suspected intellectual disability, with a sensitivity of 82.4 and specificity of 71.6 (Hayes, 2000). This is the cut-off score used in the present study to distinguish between participants with 'suspected intellectual disability' (HASI score < 85, corresponding to an IQ < 70) and 'no suspected intellectual disability' (HASI score of ≥ 85, corresponding to an IQ ≥ 70). We used the Dutch version of the HASI, which was provided by the developers of the HASI.

Care needs

Care needs were assessed using a questionnaire developed by Impuls - Netherlands Center for Social Care Research (Lako et al., 2013). The response categories were based on the format of the Short Form Quality of Life and Care questionnaire (QoLC) (Wennink & Van Wijngaarden, 2004). Needs were considered on seven domains, which were subdivided into several items: Housing & daily life (finding housing, household care, self-care); Finances & daily activities (finances, daily activities, finding work, basic skills (reading, writing, calculating), transport); Physical health (physical health, alcohol use, drug use, dental care, nutrition); Mental health (mental health, empowerment (assertiveness, self-defense courses); Safety & protection against violence (own safety, safety of other people); Social relations (family contacts, social contacts, relationship with partner) and Children (relationship with own children, help for own children) (22 life domains in total). For each item, two questions were asked: 1) "Do you want help on . . . ?", and 2) "Do you get help on . . . ?". A confirmative response on both questions was categorised as a 'met care need', a confirmative response on the first question and a negative response on the second was categorised as 'unmet care need' and two negative responses or a negative response on the first question and a confirmative response on the second question was categorised as 'no care need'.

A negative response on the first question and a confirmative response on the second ("unsolicited care") was rare (9.6% at the most for finances at follow-up). For statistical purposes, and because these latter participants reported no care needs, they were categorised as having 'no care need'.

When a care need was not relevant, e.g. concerning 'relationship with own children' because the participant had no children, that care need was handled as a missing for that participant. Due to missing values on a limited number of life domains, in Table 2 the counts for 'unmet care need', 'met care need' and 'no care need' do not add up to 22. For both measurements, no significant relationship was found between a suspected intellectual disability and the number of missing values on care needs.

The questionnaire has been used in research among homeless youth (Krabbenborg, Boersma, & Wolf, 2013) and abused women (Jonker, Sijbrandij, & Wolf, 2012; Wolf, Jonker, Meertens, & Te Pas, 2006).

Housing support needs

To assess the housing support needs, questions were asked regarding where participants would like to live (e.g. independent housing, a facility, no permanent place), whether they would like to have housing support and, if so, what type of support they would like. The two support options were: 1) support on-call, i.e. the participant prefers to ask for support himself/herself in case of a demand for services, or 2) support by appointment, i.e. the participant prefers to have regular appointments (e.g. once every week). The questionnaire for this was developed by Impuls - Netherlands Center for Social Care Research and has been used in research among homeless people (Vocks, Mensink, & Wolf, 2008).

Statistical analysis

Descriptive analyses were performed to describe the housing status, demographic characteristics, and care use for participants with and without a suspected intellectual disability. Relationships between suspected intellectual disability and demographic characteristics were analysed using χ^2 tests for categorical data (gender, housing status, education, ethnicity, service use) and a t-test for the continuous variable (age). To determine the effect of these factors on the number of life domains with an 'unmet care need', a 'met care need' and 'no care need', a repeated-measures analysis of covariance was performed. The follow-up period (T0-T2) was included as a within-group factor, suspected intellectual disability (yes or no) as a between-group factor, and the baseline variables age and gender as covariates. To test for differences between the two groups on the number of domains with an 'unmet care need', a 'met care need' and 'no care need' at the baseline measurement (T0) and at the follow-up measurement (T2), an analysis of covariance was performed for both measurements, with age and gender as covariates. To analyse changes in care needs between baseline measurement and follow-up, a McNemar-Bowker test was used (3 x 2 categorical data) separately for those with and those without a suspected intellectual disability. After a significant result (p <0.05) of the McNemar-Bowker test, McNemar's test was used for 2 × 2 categorical data for each care need category (unmet care need, met care need, no care need). Missing values were removed from the analyses. Life domains with no occurrence in one or more of the three categories of care needs for either the baseline or the follow-up measurement could not be analysed. This was the case for self-care (both suspected intellectual disability and no suspected intellectual disability group), transport (no suspected intellectual disability group) and safety of other people (both suspected intellectual disability and no suspected intellectual disability group).

Relationships between a suspected intellectual disability and housing support needs were analysed using X^2 tests for categorical data. All statistical analyses were conducted with the statistical software package IBM SPSS Statistics version 19.

5.4 Results

Of the initial cohort of 513 participants, 344 (67.1%) were also interviewed for the two follow-up measurements. For the purpose of the present study, we excluded eight participants who did not complete the screener for intellectual disability. Of the latter, four were not screened for intellectual disability because of a language barrier and four refused to be screened for intellectual disability. Therefore, this study consists of 336 participants (65.5% of the initial cohort) who were interviewed for the two follow-up measurements and completed the screener for intellectual disability. Compared to respondents, non-respondents were on average younger (33.4 vs. 37.8 years) and more often had a non-native Dutch ethnicity (71.6% vs. 59.8%). No selective non-response was found with respect to gender (74.7% of the respondents was male, 80.2% of the non-respondents was male), education, and the result of the intellectual disability screener (having a suspected intellectual disability or not).

No data were available on how many potential participants were approached and how many refused to participate. Comparison of the total population of homeless adults and young adults who reported themselves at a central access point for social relief in one of the four major cities in 2011 revealed that adult participants (aged ≥ 23 years; *n*=410) were representative in terms of age and gender. Young adult participants (aged 18-22 years; *n*=103) were representative in terms of age but, in this subgroup, males were overrepresented (60.2% younger males in the cohort vs. 49.2% younger males in the total group).

Baseline characteristics of participants with and without a suspected intellectual disability

In this sample of 336 participants, 104 (31.0%, 95% CI 26.2% to 36.1%) had a suspected intellectual disability and 232 (69.0%, 95% CI 63.9% to 73.8%) did not have a suspected intellectual disability; Table 1 presents the baseline characteristics of these two subgroups. The mean age of participants with a suspected intellectual disability was significantly higher than that of those without a suspected intellectual disability, and significantly more participants with a suspected intellectual disability were male. Participants with a suspected intellectual disability were less likely to be marginally housed and less likely to be institutionalised, but more likely to be homeless at baseline than participants without a suspected intellectual disability. Participants with a suspected intellectual disability were more likely to fall in the lowest category of education and less likely to fall in the low or intermediate category.

Table 1 Baseline characteristics of participants with and without a suspected intellectual disability

Baseline characteristics	Suspected ID (*n*'s range[1]=102-104)	No suspected ID (*n*'s range[1]=227-232)	*P*-value
Mean age in years (SD)	40.7 (12.8)	36.6 (13.0)	**0.007**
Gender % male (*n*)	84.6 (88)	70.3 (163)	**0.005**
Housing status % (*n*)			**0.015[2]**
Housed	5.8 (6)	3.9 (9)	
Marginally housed	7.7 (8)	16.0 (37)	
Institutionalised	5.8 (6)	13.9 (32)	
Homeless	80.8 (84)	66.2 (153)	
Education % (*n*)			**<0.001[3]**
Lowest	44.7 (46)	25.5 (59)	
Low	36.9 (38)	50.2 (116)	
Intermediate	5.8 (6)	17.7 (41)	
High	12.6 (13)	6.5 (15)	
Ethnicity % (*n*)			0.323
Native Dutch	37.3 (38)	41.4 (94)	
First-generation immigrant	45.1 (46)	36.6 (83)	
Second-generation immigrant	17.6 (18)	22.0 (50)	
Service use % (*n*)			
Medical care (% used)	69.2 (72)	71.6 (166)	0.665
Mental health care (% used)	32.7 (34)	25.9 (60)	0.197
Housing assistance (% used)	24.0 (25)	23.7 (55)	0.947

P-values in bold indicate a significant difference ($p < 0.05$); ID=intellectual disability

[1] n's range was given due to occasional missing data

[2] Post hoc χ^2: marginally housed; ID < no ID; $\chi^2(1)=4.090$, $p<0.05$, OR=0.437; institutionalised; ID < no ID; $\chi^2(1)=4.375$, $p<0.05$, OR=0.381; homeless; ID > no ID; $\chi^2(1)$ 7.133, $p<0.01$, OR=2.141

[3] Post hoc χ^2: Lowest; ID > no ID; $\chi^2(1)=11.797$, $p<0.01$, OR=2.353; Low; ID < no ID; $\chi^2(1)=5.041$, $p<0.05$, OR=0.580; Intermediate; ID < no ID; $\chi^2(1)$ 7.556, $p<0.01$, OR=0.287

Case description 1.

Chantal is a woman who is almost 50 years old, with short hair and wearing a jogging suit. She has a loud voice, is very straightforward and talks a lot. Although she had her own apartment for a long time, her debts and problems piled up and she was eventually evicted. She has strong opinions about the social workers in the facility where she now lives, which is specifically for homeless people with an intellectual disability. She says that most of them are good - but they shouldn't think that they know better than herself, what is actually good for her. "I may have a…ehm…how do they call this again… (mild intellectual disability, ed.) but that doesn't mean they can treat me like a child." Eventually, she wants to live independently again - but with some assistance for her finances and administration: she says "I'm not an expert in these things."

Self-reported care needs at baseline and at 1.5-year follow-up

Unmet care needs

Table 2 shows that at both baseline and follow-up, there was no significant main effect of having a suspected intellectual disability on the number of life domains with unmet care needs. However, there was a significant main effect of time of measurement on the number of domains with an unmet care need ($F(1, 332)=9.57$, $p=0.002$): participants with and without a suspected intellectual disability reported unmet care needs on significantly fewer domains at follow-up (1.9 and 1.6, respectively) compared to baseline (3.6 and 2.9, respectively). No significant interaction effect between time of measurement and having a suspected intellectual disability on the number of domains with an unmet care need was found.

Met care needs

At baseline and follow-up there was no significant main effect of having a suspected intellectual disability on the number of life domains with met care needs (Table 2). Also, there was no significant main effect of time of measurement on the number of domains with a met care need, and no significant interaction effect between time of measurement and having a suspected intellectual disability on the number of domains with a met care need.

No care needs

At baseline there was no significant main effect of having a suspected intellectual disability on the number of life domains with no care needs. At follow-up, participants with a suspected intellectual disability reported 'no care needs' on significantly fewer domains (16.4) than participants without a suspected intellectual disability (17.5) ($F(1, 331)=4.90$, $p=0.028$) (Table 2). A significant main effect of time of measurement was found on the number of domains with no care needs ($F(1, 332)=11.60$, $p=0.001$): participants with and without a suspected intellectual disability reported 'no care needs' on significantly more domains at follow-up (16.4 and 17.5, respectively) compared to baseline (15.0 and 15.7, respectively). No significant interaction effect was found between time of measurement and having a suspected intellectual disability on the number of domains with no care needs.

Table 2 Number of life domains (22 in total) with an 'unmet care need', a 'met care need' or 'no care need' at baseline (T0) and after 1.5 years (T2) for participants with a suspected intellectual disability and without a suspected intellectual disability[1]

	Suspected ID (*n*=104)	Suspected ID (*n*=104)	No suspected ID (*n*=232)	No suspected ID (*n*=232)
	T0 (M (SD))	T2 (M (SD))	T0 (M (SD))	T2 (M (SD))
Unmet care need	3.6 (2.7)	1.9 (2.1) [a]	2.9 (2.7)	1.6 (1.9) [a]
Met care need	2.3 (1.8)	2.4 (2.1)	2.2 (1.9)	1.8 (1.8)
No care need	15.0 (3.5)	16.4 (3.2) [a b]	15.7 (3.0)	17.5 (2.7) [a b]

ID=intellectual disability
[1] Repeated measures Ancova adjusted for age and gender
[a] p<0.05 for time of measurement (within subjects)
[b] p<0.05 for suspected ID vs. no suspected ID (between subjects)

Self-reported care needs at baseline and at 1.5-year follow-up on life domains

For both groups, 'unmet care needs' decreased significantly between baseline and follow-up on: finances, finding housing, physical health, finding work, mental health, empowerment, and dental care. For participants without a suspected intellectual disability 'unmet care needs' also decreased for household care, and nutrition (Table 3).

For both groups, 'met care needs' decreased significantly on finding housing. For participants with a suspected intellectual disability, but not for those without a suspected intellectual disability, 'met care needs' on finances and dental care increased significantly between baseline and follow-up (Table 3).

For both groups, 'no care needs' increased significantly on finding housing, finding work, mental health and empowerment. For participants *with* a suspected intellectual disability, but not for those without a suspected intellectual disability, 'no needs' on physical health increased significantly between baseline and follow-up. For participants *without* a suspected intellectual disability, but not for those with a suspected intellectual disability, 'no care needs' on nutrition increased significantly between baseline and follow-up (Table 3).

Table 3 An 'unmet care need', a 'met care need' and 'no care need' at baseline (T0) and after 1.5 years (T2) for participants with and without a suspected intellectual disability on life domains

Main domain	Specific life domain			Suspected ID (%) (*n*'s range= 46-104)		*P*-value[1]		No suspected ID (%) (*n*'s range[1]= 102-232)		*P*-value[1]
			n	T0	T2		*n*	T0	T2	
Housing & daily life	Finding housing		102			<0.001	227			<0.001
		Unmet Need		39.2	16.7	<0.001		42.3	21.1	<0.001
		Met need		49.0	32.4	0.016		51.1	26.9	<0.001
		No need		11.8	51.0	<0.001		6.6	52.0	<0.001
	Household care		103			0.856	229			0.041
		Unmet Need		4.9	3.9			5.2	1.7	0.021
		Met need		3.9	2.9			1.7	1.7	1.000
		No need		91.3	93.2			93.0	96.5	0.096
Finances & daily activities	Finances		103			0.001	228			<0.001
		Unmet Need		23.3	12.6	0.035		27.2	15.4	0.001
		Met need		43.7	61.2	0.005		47.4	41.2	0.180
		No need		33.0	26.2	0.281		25.4	43.4	<0.001
	Daily activities		103			0.299	228			0.002
		Unmet Need		17.5	8.7			17.1	7.0	<0.001
		Met need		11.7	13.6			7.5	8.3	0.856
		No need		70.9	77.7			75.4	84.6	0.005
	Finding work		101			0.012	226			<0.001
		Unmet Need		42.6	23.8	0.002		39.4	23.9	<0.001
		Met need		14.9	18.8	0.523		13.3	10.2	0.371
		No need		42.6	57.4	0.024		47.3	65.9	<0.001
	Basic skills		103			0.092	231			0.270
		Unmet Need		18.4	8.7			7.8	4.8	
		Met need		4.9	5.8			0.4	1.3	
		No need		76.7	85.4			91.8	93.9	
	Transport		103			0.526	230			n.a.
		Unmet Need		6.8	3.9			-	-	
		Met need		1.0	1.0			-	-	
		No need		92.2	95.1			-	-	

Main domain	Specific life domain			Suspected ID (%) (*n*'s range= 46-104)		*P*-value[1]		No suspected ID (%) (*n*'s range[1]= 102-232)		*P*-value[1]
			n	T0	T2		*n*	T0	T2	
Physical health	Physical health		104			0.002	232			0.023
		Unmet Need		27.9	9.6	<0.001		20.7	11.6	0.003
		Met need		24.0	26.0	0.878		17.7	20.7	0.419
		No need		48.1	64.4	0.021		61.6	67.7	0.135
	Alcohol use		102			0.532	230			0.506
		Unmet Need		3.9	3.9			3.9	1.8	
		Met need		5.9	6.9			1.8	2.2	
		No need		90.2	89.2			94.3	96.1	
	Drug use		103			0.753	228			0.147
		Unmet Need		4.9	3.9			3.5	0.9	
		Met need		4.9	7.8			4.8	5.3	
		No need		90.3	88.3			91.7	93.9	
	Dental care		104			0.003	230			0.039
		Unmet Need		51.9	30.8	0.001		36.5	26.5	0.012
		Met need		13.5	26.9	0.016		20.9	26.1	0.182
		No need		34.6	42.3	0.243		42.6	47.4	0.305
	Nutrition		104			0.077	230			0.005
		Unmet Need		17.3	5.8			13.4	6.5	0.005
		Met need		4.8	4.8			4.8	1.7	0.118
		No need		77.9	89.4			81.8	91.8	<0.001
Mental health	Mental health		98			0.005	231			0.002
		Unmet Need		21.4	7.1	0.004		19.5	9.1	0.001
		Met need		20.4	17.3	0.648		19.5	18.2	0.766
		No need		58.2	75.5	0.001		61.0	72.2	0.001
	Empower-ment		104			0.001	230			0.002
		Unmet Need		24.0	13.5	0.035		16.1	6.5	0.001
		Met need		7.7	3.8	0.344		5.7	3.0	0.238
		No need		68.3	82.7	0.004		78.3	90.4	<0.001
Safety & protection against violence	Own safety		101			0.378	228			0.053
		Unmet Need		5.9	6.9			4.4	0.9	
		Met need		4.0	1.0			2.6	1.3	
		No need		90.1	92.1			93.0	97.8	
Social relations	Family contacts		98			0.515	222			0.099
		Unmet Need		9.2	5.1			6.3	3.2	
		Met need		1.0	2.0			3.6	1.8	
		No need		89.8	92.9			90.1	95.0	

Main domain	Specific life domain			Suspected ID (%) (*n*'s range= 46-104)		*P*-value[1]		No suspected ID (%) (*n*'s range[1]= 102-232)		*P*-value[1]
			n	T0	T2		*n*	T0	T2	
Social relations	Social contacts		102			0.362	231			0.097
		Unmet Need		7.8	4.9			5.6	3.9	
		Met need		3.9	2.0			3.0	0.9	
		No need		88.2	93.1			91.3	95.2	
	Relation-ship with partner		90			0.572	212			0.343
		Unmet Need		6.7	4.4			7.1	4.2	
		Met need		2.2	4.4			1.4	1.9	
		No need		91.1	91.1			91.5	93.9	
Children	Relationship with own children		46			0.059	103			0.650
		Unmet Need		28.3	8.7			7.8	9.7	
		Met need		2.2	8.7			6.8	3.9	
		No need		69.6	82.6			85.4	86.4	
	Help for own children		46			0.102	102			0.657
		Unmet Need		10.9	10.9			4.9	4.9	
		Met need		2.2	10.9			6.9	7.8	
		No need		87.0	78.3			88.2	87.3	

ID=intellectual disability; [1] The overall McNemar-Bowker test p-value is given on the top row for each life domain. When significant (p<0.05) the p-values for the post hoc McNemar tests are given separately for 'unmet need', 'met need' and 'no need'.

Transitions of self-reported unmet care needs at baseline

To clarify the transitions of unmet care needs over time, we constructed figures which visually represent these transitions. Figures 1-5 show the transitions of self-reported unmet care needs at baseline for the five life domains with the highest percentage of participants with self-reported unmet needs at baseline, reported by participants with and without a suspected intellectual disability.

Figure 1 Transitions of unmet care needs for finances at baseline to care needs at 1.5-year follow-up

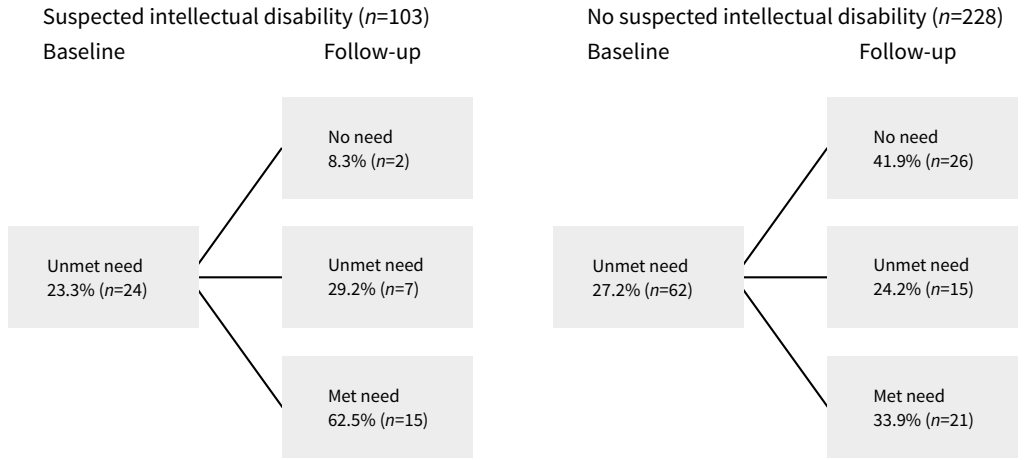


Figure 2 Transitions of unmet care needs for finding housing at baseline to care needs at 1.5-year follow-up

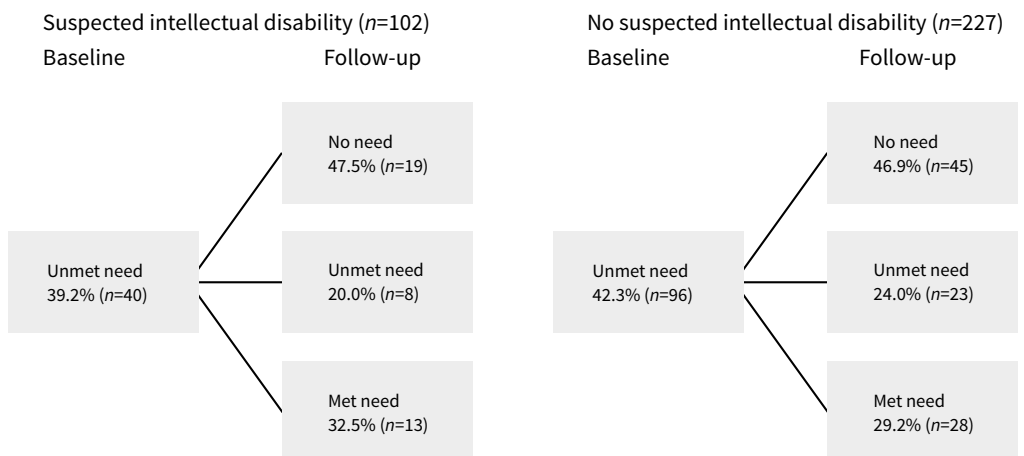


Figure 3 Transitions of unmet care needs for physical health at baseline to care needs at 1.5-year follow-up

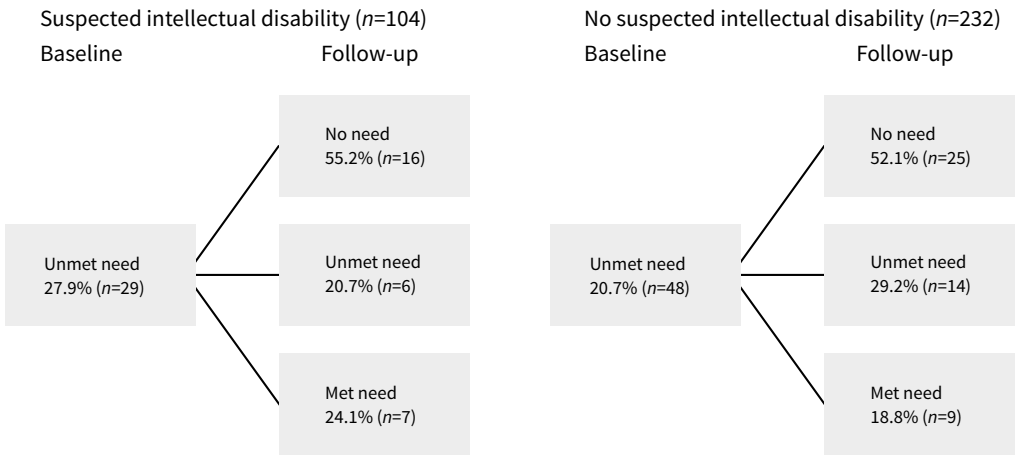


Figure 4 Transitions of unmet care needs for finding work at baseline to care needs at 1.5-year follow-up

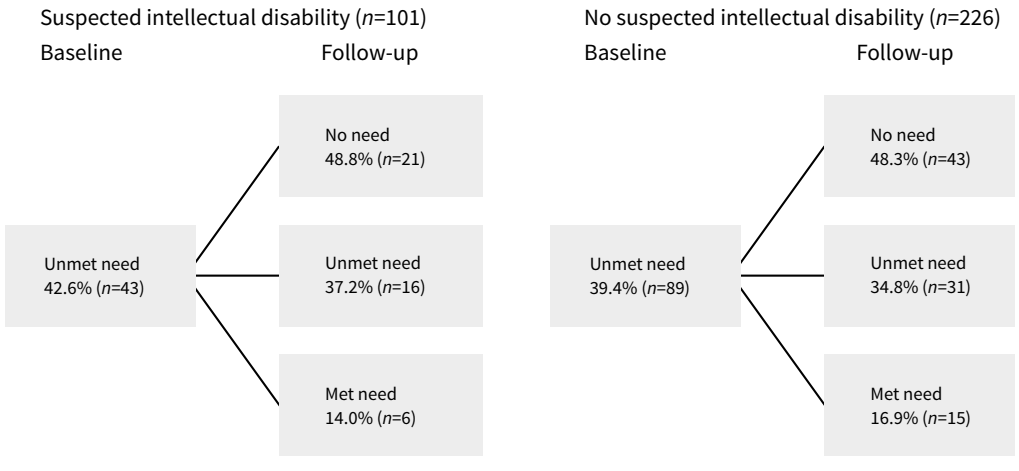
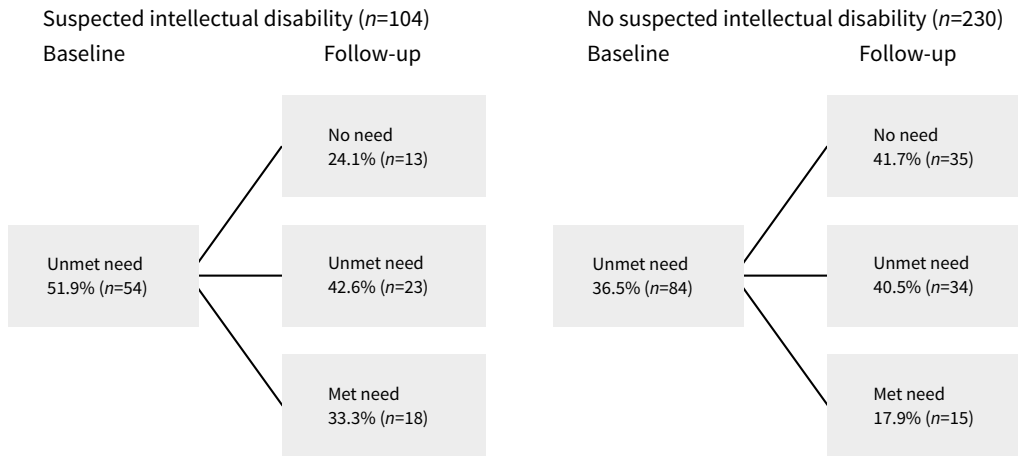


Figure 5 Transitions of unmet care needs for dental care at baseline to care needs at 1.5-year follow-up



Case description 2.

Delano has a tough appearance, and is wearing hip-hop clothes and large headphones. He is 36 years old, but looks younger. He has been using cannabis every day since his adolescence and, whenever he has some money, he also like to drink beer. He spent some time in a mental health clinic because he often feels gloomy and anxious. At the moment he lives temporarily with his aunt, who is one of his few relatives who are not still in the Netherlands Antilles. It quickly became clear that he finds the research questions rather complicated; nevertheless, when asked what he would like, he answered straight away: "… my own house, a bit of peace in my head, and nice parties now and again."

Housing support needs

Concerning housing, almost all participants preferred independent housing irrespective of whether they have a suspected intellectual disability (97.1%), or not (98.3%). Table 4 shows that there was a significant difference in housing support needs between participants with a suspected intellectual disability and those without a suspected intellectual disability (χ^2 (2)=13.318; p=0.001): participants with a suspected intellectual disability preferred support available by appointment significantly more often than participants without a suspected intellectual disability, and less often support available on-call.

Table 4 Housing support needs of homeless people with and without a suspected intellectual disability at 1.5 years follow-up

Housing support needs	Suspected ID *n*=104	No suspected ID *n*=231	*p*-value
No need for housing support % (*n*)	36.5 (38)	40.7 (94)	0.001[1]
Need for support available on-call % (*n*)	15.4 (16)	29.9 (69)	
Need for support available by appointment % (*n*)	48.1 (50)	29.4 (68)	

ID=intellectual disability
p-value in bold indicate a significant difference (p<0.05)
[1] Post hoc χ^2: Support on-call; ID < no ID; $\chi^2(1)=7.832$, p<0.01; Support by appointment; ID > no ID; $\chi^2(1)=11.099$, p<0.01

5.5 Discussion

In the present study, around 30% of all homeless people had a suspected intellectual disability. No significant differences between participants with and without a suspected intellectual disability were found on the number of life domains with an unmet and a met care need both at baseline and at follow-up, and on 'no care need' at baseline. However, at follow-up, participants with a suspected intellectual disability reported 'no care needs' on fewer domains than participants without a suspected intellectual disability, while at baseline there were no differences between the groups. This indicates that the number of life domains with care needs between these groups of homeless people are similar when entering the social relief system, but that the care needs of those with a suspected intellectual disability last longer than those without a suspected intellectual disability. As Thompson et al. (2009) stated: "*Support needs reflect a limitation in functioning as a result of either personal capacity or the context in which the person is functioning.*" From that viewpoint, the care needs of homeless people without a suspected intellectual disability may be seen more as a result of the context (i.e. their acute homelessness at baseline), while the enduring needs of those with a suspected intellectual disability may to a larger extent be explained by their personal capacity. Therefore, the care needs of homeless people with a suspected intellectual disability can be seen as an enduring rather than a temporary characteristic.

In both our subgroups, examination of the transitions of care needs on a broad range of life domains revealed some differences in their patterns of care needs over time.
For example, of participants with a suspected intellectual disability and an unmet need at baseline on finances, > 90% still report having care needs at follow-up. On the other hand, < 60% of participants without a suspected intellectual disability and an unmet care need at baseline on this domain still report having care needs at follow-up, while at baseline the percentages of unmet care needs on this domain were similar. To summarise, on this life domain, most participants with a suspected intellectual disability made a transition from an unmet care need to a met care need, whereas participants without a suspected intellectual disability mostly made a transition from an unmet care need to no care need. Financial support (which includes improvement of basic financial understanding) may benefit those with a suspected intellectual disability, and might increase decision-making abilities and enhance the quality of life and self-confidence of those with a suspected intellectual disability (Suto, Clare, Holland, & Watson, 2005). However, although providing support to people with intellectual disability might enable functioning in daily life activities, it does not eliminate the possibility that they will need support for a longer period of time (Thompson et al., 2009).

Of the 22 life domains for which we investigated the care needs, it is noteworthy that care needs were reported for relatively few of these domains by the homeless who reported themselves at a central access point for social relief. Although homelessness is often associated with mental health and substance use problems (Fazel et al., 2008), in the present study the prevalence of self-reported care needs reported on these domains is relatively low. For example, only about 10% of the participants reported a care need for drug or alcohol use. This was the case for participants with and without a suspected intellectual disability, even though those with a suspected intellectual disability were earlier identified as having relatively high rates (about 30%) of substance dependence (Van Straaten et al., 2014). Participants in need of mental health or addiction treatment services may be in denial about the importance of treatment. However, the low prevalence of care needs on these domains seems to indicate that they are not (yet) willing or ready to accept such services. This study reveals that care needs at baseline are most frequently seen on finding housing, finances, dental care, finding work and physical health, and this applies to homeless people with and without a suspected intellectual disability. To meet the self-reported care needs of these individuals, our results emphasise that care providers should initially focus on basic needs such as housing, finances and physical health (including dental care) rather than on life domains such as mental health or substance use. These findings are consistent with Maslow's hierarchy of needs (Maslow, 1943), which states that without having fulfilled basic needs, it is difficult to deal with higher order needs. Longer follow-up of the self-reported care needs of homeless people will provide more insight into how these needs further develop. One extensive longitudinal study among formally institutionalised mentally disabled individuals, provided interesting insight into community participation during the 30-year follow-up (Edgerton, 1993). This latter study suggests that, whereas cognitive skills change relatively little, adaptive behaviours can change dramatically. Edgerton's study showed that as the participants became older, they increased their ability to participate in the community and perform activities of daily living independently. This might also apply to our participants; however, long-term follow-up is required to substantiate this. In addition, a qualitative study would help elucidate the underlying reasons and processes with regard to the self-reported care needs.

In the present study, most participants preferred independent housing and about 60% would like to receive housing support. At follow-up, participants with a suspected intellectual disability more often preferred housing support available by appointment (instead of on-call) than participants without a suspected intellectual disability. Due to the fact that most participants with a suspected intellectual disability want to live independently but with housing support by appointment, 'Housing First' may be an appropriate approach to fit their needs. 'Housing First' focuses on providing homeless people

with housing before providing services as needed; this approach has shown promising results among homeless people with substance use problems and psychiatric problems (Maas, Al Shamma, Altena, Jansen, & Wolf, 2012; Tsemberis, Gulcur, & Nakae, 2004; Tsemberis, Kent, & Respress, 2012). This approach may also be appropriate for homeless people with a suspected intellectual disability but, to our knowledge, has not yet been investigated.

Strengths and limitations

Among homeless people (unmet) care needs is a well-studied area, but no longitudinal study has compared the self-reported care needs of homeless people with and without a suspected intellectual disability. Because having a suspected intellectual disability is prevalent among the homeless, this study adds valuable information on the characteristics of this subgroup. Other strengths of the study include the relatively large sample size, the broad range of care needs investigated, and the use of self-reports: reflecting the needs of this group from their own viewpoint. However, although problems can occur when using questionnaires designed for the general population among persons with an intellectual disability (e.g. acquiescence, not understanding the question), we anticipated these problems in several ways (as described in the Methods).

A limitation of this study is that we have no data on the number of potential participants who were initially invited, as it was not feasible to systematically collect data on how many potential participants were approached and how many refused to participate. Consequently, no initial non-response data are available. However, comparison between the total group of homeless adults/young adults who reported at a central access point for social relief in 2011 and our study participants, shows that our adult participants were representative in terms of age and gender, and that our young adult participants were representative in terms of age but, in this subgroup, males were overrepresented. This overrepresentation of males among the young adult participants might influence the generalisability of the results.

With regard to the intellectual disability screener, a relatively large number of false-positives might have occurred because the intellectual disability screener was designed to be over-inclusive and may identify those who have other types of learning difficulty, those who are intoxicated by some substance, or those who have a psychiatric disability (Hayes, 2000). It should be noted that the present study aimed to identify a subgroup of homeless people whose daily functioning was restricted due to low intelligence. However, only after a full-scale diagnostic assessment (including intellectual functioning, concurrent deficits in adaptive behaviour and manifestations before the age of 18 years) (Schalock et al. 2010), can a diagnosis of intellectual disability be made. We cannot make any assumptions with regard to aetiology, because we do not know whether, for example, the cognitive impairment is due to traumatic head injury or long-term substance use and, thus, did not manifest itself before the age of 18 years. On the other hand, concerning the practical relevance, the results of the screener do represent the level at which homeless people with a suspected intellectual disability are currently functioning, and have implications for their current situation and care needs.

A validation study on the Dutch version of the HASI indicated to lower the cut-off score from 85 to 81 to prevent potential unnecessary referrals to care institutions (Barendregt, Van de Mheen, & Wits, 2013); however, for screening in a research setting this drawback is less important. Also, the inclusion of individuals with borderline intellectual disability (IQ 70-85) as having a suspected intellectual disability (instead of only those with an IQ <70) as a result of over-inclusiveness is acceptable in the present study, as those persons also need to be taken into account.

The present study included a broad range of care needs. While some of these life domains clearly contain care needs, e.g. needs related to physical or mental health, some domains (e.g. related to finances and daily activities) might comprise more of a “support need”, i.e. indicating that support is needed to fully participate in the activities of everyday life as a full citizen in society. However, for simplicity and consistency, we have used the term ‘care needs’ for all the life domains.

It should also be noted that our study population, consisting of homeless persons accepted for an individual programme plan, may not be fully representative of the entire population of homeless people in the Netherlands. Subgroups of homeless people not included in this study were undocumented homeless people, and homeless people who do not make use of social relief facilities.

Conclusion

Our findings suggest that homeless people who had been accepted for an individual programme plan with a suspected intellectual disability have care needs for a longer period of time than those without a suspected intellectual disability. Among the specific life domains, this applies in particular to finances. With regard to housing, homeless people with a suspected intellectual disability express a preference for independent housing with support available by appointment. Providing care to homeless people with a suspected intellectual disability might comprise ongoing care and support, also after exiting homelessness. Support services should take this into account when considering their care provision and planning of services.

5.6 References

Baggett, T. P., O'Connell, J. J., Singer, D. E., & Rigotti, N. a. (2010). The unmet health care needs of homeless adults: a national study. *American Journal of Public Health*, 100(7), 1326–33. doi:10.2105/AJPH.2009.180109

Barendregt, C., Van de Mheen, D., & Wits, E. (2013). *Screenen op middelengebruik en psychische klachten in de maatschappelijke opvang. Zes screeners gevalideerd en getest op bruikbaarheid*. Rotterdam.

Desai, M. M., & Rosenheck, R. a. (2005). Unmet need for medical care among homeless adults with serious mental illness. *General Hospital Psychiatry*, 27(6), 418–25. doi:10.1016/j.genhosppsych.2005.06.003

Edgerton, R. B. (1993). *The Cloak of Competence: Revised and Undated*. Berkeley: University of California Press.

Fazel, S., Khosla, V., Doll, H., & Geddes, J. (2008). The prevalence of mental disorders among the homeless in western countries: systematic review and meta-regression analysis. *PLoS Medicine*, 5(12), e225. doi:10.1371/journal.pmed.0050225

Finlay, W. M. L., & Lyons, E. (2001). Methodological Issues in Interviewing and Using Self-Report Questionnaires With People With Mental Retardation. *Psychological Assessment*, 13(3), 319–335.

Hayes, S. (2000). *Hayes Ability Screening Index (HASI) manual. Behavioural sciences in medicine*. Sydney.

Hwang, S. W. (2001). Homelessness and health. *CMAJ: Canadian Medical Association Journal*, 164(2), 229–33. Retrieved from www.ncbi.nlm.nih.gov/pubmed/16078553

Jonker, I. E., Sijbrandij, M., & Wolf, J. R. L. M. (2012). Toward Needs Profiles of Shelter-Based Abused Women: Latent Class Approach. *Psychology of Women Quarterly*, 36(1), 38–53. doi:10.1177/0361684311413553

Kertesz, S. G., McNeil, W., Cash, J. J., Desmond, R., McGwin, G., Kelly, J., & Baggett, T. P. (2014). Unmet need for medical care and safety net accessibility among Birmingham's homeless. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, 91(1), 33–45. doi:10.1007/s11524-013-9801-3

Krabbenborg, M. A. M., Boersma, S. N., & Wolf, J. R. L. M. (2013). A strengths based method for homeless youth: effectiveness and fidelity of Houvast. *BMC Public Health*, 13, 359. doi:10.1186/1471-2458-13-359

Krahn, G. L., Hammond, L., & Turner, A. (2006). A cascade of disparities: health and health care access for people with intellectual disabilities. *Mental Retardation and Developmental Disabilities Research Reviews*, 12(12), 70–82. doi:10.1002/mrdd

Krausz, R. M., Clarkson, A. F., Strehlau, V., Torchalla, I., Li, K., & Schuetz, C. G. (2013). Mental disorder, service use, and barriers to care among 500 homeless people in 3 different urban settings. *Social Psychiatry and Psychiatric Epidemiology*, 48(8), 1235–1243. doi:10.1007/s00127-012-0649-8

Lako, D. A., de Vet, R., Beijersbergen, M. D., Herman, D. B., van Hemert, A. M., & Wolf, J. R. (2013). The effectiveness of critical time intervention for abused women and homeless people leaving Dutch shelters: study protocol of two randomised controlled trials. *BMC Public Health*, 13(1), 555. doi:10.1186/1471-2458-13-555

Lewis, M. A., Lewis, C. E., Leake, B., King, B. H., & Lindemann, R. (2002). The quality of health care for adults with developmental disabilities. *Public Health Reports (Washington, D.C. : 1974)*, 117(2), 174–84. Retrieved from www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1497422&tool=pmcentrez&rendertype=abstract

Maas, M., Al Shamma, S., Altena, A., Jansen, N., & Wolf, J. (2012). *Discus Amsterdam: Housing First Evaluatie van de werkzaamheid*. Nijmegen.

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, 50(4), 370–396. doi:10.1037/h0054346

Palepu, A., Gadermann, A., Hubley, A. M., Farrell, S., Gogosis, E., Aubry, T., & Hwang, S. W. (2013). Substance use and access to health care and addiction treatment among homeless and vulnerably housed persons in three Canadian cities. *PloS One*, 8(10), e75133. doi:10.1371/journal.pone.0075133

Schalock, R. L., Borthwick-Duffy, S. A., Bradley, V. J., Buntinx, W. H., Coulter, D. L., Craig, E. M., Yeager, M. H. (2010). *Intellectual disability: Definition, classification, and systems of supports*. Washington, DC: American Association on Intellectual and Developmental Disabilities.

Spence, S., Stevens, R., & Parks, R. (2004). Cognitive dysfunction in homeless adults: a systematic review. *Journal of the Royal Society of Medicine*, 97(8), 375–9. doi:10.1258/jrsm.97.8.375

Suto, W. M. I., Clare, I. C. H., Holland, A.J., & Watson, P. C. (2005). The relationships among three factors affecting the financial decision-making abilities of adults with mild intellectual disabilities. *Journal of Intellectual Disability Research: JIDR*, 49(Pt 3), 210–7. doi:10.1111/j.1365-2788.2005.00647.x

Thompson, J. R., Bradley, V. J., Buntinx, W. H. E., Schalock, R. L., Shogren, K. a, Snell, M. E., … Yeager, M. H. (2009). Conceptualizing supports and the support needs of people with intellectual disability. *Intellectual and Developmental Disabilities*, 47(2), 135–46. doi:10.1352/1934-9556-47.2.135

Tsemberis, S., Gulcur, L., & Nakae, M. (2004). Housing First, Consumer Choice, and Harm Reduction for Homeless Individuals With a Dual Diagnosis. *American Journal of Public Health*, 94(4), 651–656. doi:10.2105/AJPH.94.4.651

Tsemberis, S., Kent, D., & Respress, C. (2012). Housing stability and recovery among chronically homeless persons with co-occuring disorders in Washington, DC. *American Journal of Public Health*, 102(1), 13–6. doi:10.2105/AJPH.2011.300320

Van Straaten, B., Schrijvers, C. T. M., Van der Laan, J., Boersma, S. N., Rodenburg, G., Wolf, J. R. L. M., & Van de Mheen, D. (2014). Intellectual Disability among Dutch Homeless People: Prevalence and Related Psychosocial Problems. *PLoS ONE*, 9(1), e86112. doi:10.1371/journal.pone.0086112

Vocks, J., Mensink, C., & Wolf, J. (2008). *Omvang van de daklozenpopulatie in de regio Zaanstreek: Resultaten van een omvangschatting in 2008*. Nijmegen.

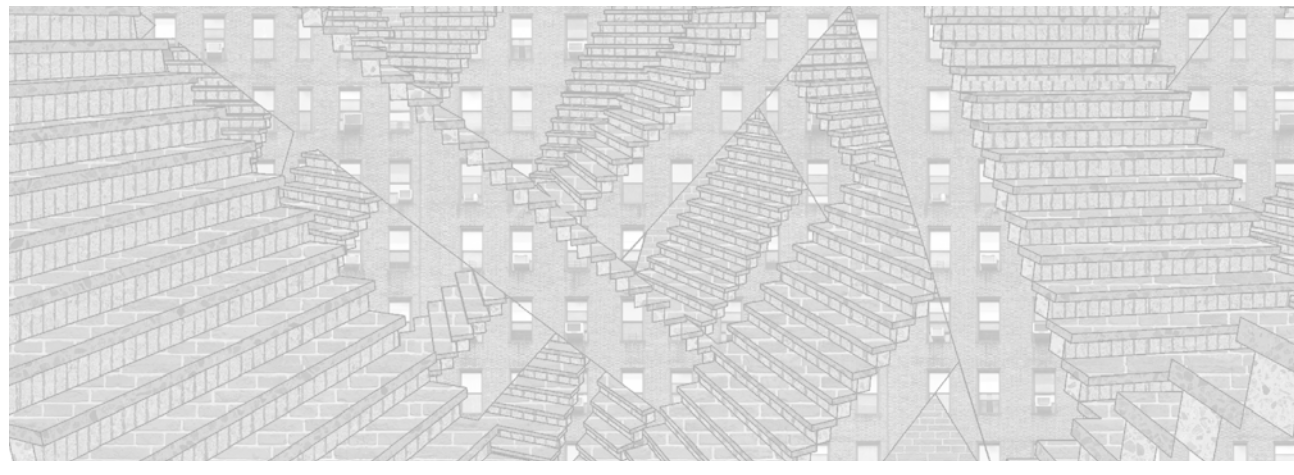
Wennink, J., & Wijngaarden, B. V. (2004). *Quality of life and care (QoLC). Kwaliteit van leven en vervulling zorgwensen [Quality of Life and Care (QoLC). Quality of life and fulfilling of care needs]*. Utrecht.

Wolf, J. R. L. M., Jonker, I. E., Meertens, V., & Te Pas, S. (2006). *Maat en baat van de vrouwenopvang. Onderzoek naar vraag en aanbod [Refuge facilities for women: Availability and effectiveness: A study of supply and demand]*. Amsterdam: SWP.

chapter 6

housing

Dutch homeless people 2.5 years after shelter admission: what are predictors of housing stability and housing satisfaction?



Dutch homeless people 2.5 years after shelter admission: what are predictors of housing stability and housing satisfaction?

Barbara Van Straaten, Jorien Van der Laan, Gerda Rodenburg, Sandra N. Boersma, Judith R.L.M. Wolf, Dike Van de Mheen

Health and Social Care in the Community, 2016, (Epub ahead of print).

6.1 Abstract

Housing stability is an important focus in research on homeless people. Although definitions of stable housing differ across studies, the perspective of homeless people themselves is generally not included. Therefore this study explored the inclusion of satisfaction with the participant's current housing status as part of the definition of housing stability and also examined predictors of housing stability with and without the inclusion of homeless person's perspective. Of the initial cohort consisting of 513 homeless participants who were included at baseline in 2011, 324 (63.2%) were also interviewed at 2.5-year follow-up. To determine independent predictors of housing stability we fitted multivariate logistic regression models using stepwise backward regression. At 2.5-year follow-up, 222 participants (68.5%) were stably housed and 163 participants (51.1%) were stably housed and satisfied with their housing status. Having been arrested (OR=0.36, 95% CI 0.20-0.63), a high level of somatisation (physical manifestations of psychological distress) (OR=0.52, 95% CI 0.30-0.91), and having unmet care needs (OR=0.77, 95% CI 0.60-0.99) were negative predictors of housing stability. Having been arrested (OR=0.43, 95% CI 0.25-0.75), high debts (OR=0.45, 95% CI 0.24-0.84) and a high level of somatisation (OR=0.49, 95% CI 0.28-0.84) were negative predictors of stable housing when satisfaction with the housing status was included. Because inclusion of a subjective component revealed a subgroup of stably housed but not satisfied participants and changed the significant predictors, this seems a relevant addition to the customary definition of housing stability. Participants with characteristics negatively associated with housing stability should receive more extensive and individually-tailored support services to facilitate achievement of housing stability.

6.2 Introduction

Housing stability is an important focus in research on homeless people. Studies with stable housing as the main outcome have shown the following negative predictors of stable housing: substance abuse (Orwin et al. 2005; North et al. 2010; Palepu et al. 2010; Aubry et al. 2012), having income assistance (Palepu et al., 2010), belonging to an older age group (>44 years), having an arrest history (Caton et al., 2005), and a longer duration of homelessness (Zlotnick, Robertson, & Lahiff, 1999). Among the positive predictors of stable housing are: an intimate partner relationship (Palepu et al., 2010), having others who are dependent on the homeless person for food/shelter (Orwin et al., 2005), a better psychosocial adjustment, recent or current employment, earned income, adequate family support, no current drug treatment (Caton et al., 2005), entitlement benefits (Zlotnick et al., 1999) and being female (Pollio, North, Thompson, Paquin, & Spitznagel, 1997).

Studies among homeless people with housing stability as an outcome have used different definitions of stable housing. They also differ regarding the types of residency on which the housing stability was based (e.g. living in a place of one's own, or also including staying in a residential care facility) and regarding the time period an individual has to be housed to categorise the housing situation as being 'stable' (e.g. a duration of 90 days of being housed, or for a longer period of time). This may also explain why the percentages of stably housed formerly homeless persons at follow-up reported in these studies range from around 20% (Zlotnick et al. 1999; North et al. 2010; Palepu et al. 2010) to ≥ 60% (Aubry et al., 2012; Orwin et al., 2005). It is remarkable that none of the definitions of stable housing that we found included the perspective of homeless people.

Housing stability implies a positive situation (Srebnik, Livingston, Gordon, & King, 1995); however, it seems questionable whether a housing situation can genuinely be called 'stable' when the characteristics of the housing situation are unsatisfactory or inadequate according to the individual concerned. Incorporating the perspective of homeless people will justify the positive connotation of housing stability, especially because there is a positive relation between housing satisfaction and residential stability (i.e. no change in residence) (Srebnik et al., 1995). Client satisfaction is also an indicator of service quality (Altena, Beijersbergen, & Wolf, 2014) and is associated with better treatment outcomes (Hser, Evans, Huang, & Anglin, 2004). In addition, taking the personal perspective of people seriously increases their sense of autonomy and competence, both of which are related to better health outcomes and general satisfaction with life in other populations (Ryan, Patrick, Deci, & Williams, 2008). Therefore, it seems relevant to include a measure of the perspective of homeless people. Incorporating their perspective is also in line with the tailored approach of service delivery and various strategies to end homelessness *(Dutch Government and four major cities, 2011; FEANTSA, 2010)*.

The main aim of this study was to investigate predictors of housing stability among a cohort of initially homeless people. The included predictors were mainly based on previous studies and complemented with practical insights. Based on previous research, the following evidence-based predictors were included: age (Caton et al., 2005), gender (Pollio et al., 1997; Zlotnick et al., 1999), accompanied by children (Orwin et al., 2005), psychological distress (somatisation [physical manifestations of psychological distress], anxiety, depression) (Aubry et al., 2012; Pollio et al., 1997), social support (Caton et al., 2005), substance use (Aubry et al., 2012; North et al., 2010; Orwin et al., 2005; Palepu et al., 2010), previous arrests (Caton et al., 2005), work (Caton et al., 2005), duration of homelessness (Zlotnick et al., 1999) and resources for basic needs (Caton et al., 2005; Zlotnick et al., 1999). In addition, the practice-based predictors of housing stability that we explored were suggested by an expert panel (including homelessness researchers, governmental and municipal policymakers and client representatives). These predictors were: education, ethnicity, debts, physical health complaints, hostility, unmet care needs, suspected intellectual disability, and experience of self-determination. We compared two definitions of stable housing on prevalence and on predictors: one definition included the subjective experience of the initially homeless participants and the other did not include their subjective experience. Using a follow-up period of 2.5 years broadly corresponds with the time frame used in previous studies on housing stability among homeless people *(Aubry et al., 2012; North et al., 2010; Orwin et al., 2005)* and, by using this time period, we expected the number of participants who were stably housed at follow-up to be sufficient to investigate the predictors of stable housing. In addition, investigating which characteristics at baseline prove to be significant predictors of housing stability at follow-up, provides information about which characteristics of homeless people might be important to screen at their intake.

The research questions were: 1) What percentage of the initially homeless participants is stably housed at follow-up (2.5 years later) and what percentage of the initially homeless participants is stably housed when including their satisfaction with the housing status at follow-up? and 2) What are the predictors of being stably housed at follow-up, reported for housing stability with and without including the perspective of initially homeless participants?
Answers to these questions will add to the existing knowledge of the predictors of stable housing among homeless people and provide new insight into the relevance of adding a subjective component to the definition of housing stability.

6.3 Methods

Ethics Statement
This study complies with the criteria for studies which have to be reviewed by an accredited Medical Research Ethics Committee. Upon consultation the Medical Review Ethics Committee region Arnhem-Nijmegen concluded that the study was exempt from formal review (registration number 2010/321). The study was conducted according to the principles expressed in the Code of Conduct for health research with data (federa.org). All participants were aged ≥ 18 years and gave written informed consent.

Design and participants
This study is part of a larger observational longitudinal cohort study following initially homeless people for a period of 2.5 years, starting from the moment they reported to a central access point for social relief in 2011 in one of the four major cities in the Netherlands (Amsterdam, The Hague, Rotterdam and

Utrecht). It is obligatory in the Netherlands for every homeless person to report to a central access point for social relief in order to gain access to social relief facilities, such as a night shelter.
At baseline, the 513 included participants satisfied all the following criteria: aged ≥ 18 years, having legal residence in the Netherlands, residing in the region of application for at least two years during the last three years, having abandoned the home situation, and not being sufficiently competent to live independently. The participants, consisting of homeless adults (aged ≥ 23 years) and young adults (aged 18-22 years), were divided over the four cities in accordance with the inflow of homeless people at the central access points for social relief.
In 2011, over 1800 adults and 1100 young adults reported themselves at a central access point for social relief and were accepted to start an individual programme plan in one of the four major cities of the Netherlands (Tuynman & Planije 2012); all these persons were potential participants for this study. No data were available on how many potential participants were approached and how many refused to participate. Therefore, in order to obtain information about the representativeness of the study participants, we compared the total population of homeless adults and young adults who reported themselves at a central access point for social relief in the four major cities in 2011 with the study participants. Comparison of the total population of homeless adults and young adults who reported themselves at a central access point for social relief in one of the four major cities in 2011 with the 513 participants at baseline revealed that adult participants (aged ≥ 23 years; *n*=410) were representative in terms of age and gender. Young adult participants (aged 18-22 years; *n*=103) were representative in terms of age but, in this subgroup, males were overrepresented (60.2% younger males in the cohort vs. 49.2% younger males in the total group).

Study procedure at first measurement
At the start of the study in 2011, potential participants were approached at a central access point for social relief or at the temporary accommodation where they stayed. When the participant agreed to participate, a trained interviewer met the participant at the participant's location of choice. All participants gave written informed consent. Participants were interviewed face-to-face using a structured questionnaire (mean duration of 1.5 h) and received €15 (around $16) for their participation. The interviews were held in Dutch, English, Spanish or Arabic.

Study procedure at follow-up
Participants were contacted at 6 months, 18 months and 30 months after the first measurement by telephone, e-mail, letter, their social contacts, their caregiver/institution, or private messages via social media. Participants were interviewed in the same way as during the first measurement, and received €20 (around $22) for participation in the second interview, €25 (around $27) for participation in the third interview, and €30 (around $32) for participation in the fourth interview.

Measurements
Demographic characteristics
Demographic characteristics including gender, age (both evidence-based predictors of stable housing), ethnicity (practice-based predictor of stable housing) and educational level (practice-based predictor of stable housing) were assessed at baseline. Ethnicity was categorised into 'native Dutch' when participants and both parents were born in the Netherlands, and as 'non-native Dutch' when participants were foreign born, or when participants were born in the Netherlands but one or both of their parents were foreign born. Education was categorised as 'lowest' when the participant completed primary education at the most, or 'higher than lowest' when the participant completed at least pre-vocational education, lower technical education, assistant training or basic labour-oriented education.

Stable housing
Stable housing was defined as at least 90 consecutive days independently housed or living in supportive housing at the 2.5 year follow-up interview. Supportive housing is a combination of housing and support services, in which the house is owned by a care organisation. People residing in other types of accommodation (e.g. those living in shelters, pensions, etc.) are not considered stably housed in our definition.

Stable housing including homeless people's satisfaction with housing status
Stable housing including satisfaction with the current housing status of the initially homeless participants, also included their subjective experience. This was measured by a question from the Dutch version of the Lehman's Quality of Life (QoL) Interview (Wolf et al., 2002): *"How do you feel about the prospect of staying on where you currently live for a long period of time?"*. Responses were given on a 7-point Likert scale labelled 'terrible' (1) to 'delighted' (7). Participants were categorised as stably housed and satisfied with their current housing situation when they met the criteria for stable housing and had a score of 5-7 ('mostly satisfied' to 'delighted') on this question. Of those who were stably housed, five participants failed to answer this question and were excluded from the analyses. The Lehman's QoL Interview has been successfully used in longitudinal research in homeless populations (Lehman, Dixon, Kernan, DeForge, & Postrado, 1997; Sullivan, Burnam, Koegel, & Hollenberg, 2000; Wolf et al., 2002).

Duration of homelessness
Duration of homelessness (evidence-based predictor of stable housing) was measured at baseline and was defined as the total number of months of being homeless ever in life.

Company of children
At baseline we asked participants whether they were accompanied by one or more of their children in the shelter facility (yes=1 or no=0) (evidence-based predictor of stable housing).

Resources for basic needs
The Dutch abbreviated version of the Lehman QoL Interview (Wolf et al., 2002) was used to assess the adequacy of finances to cover certain expenditures at baseline (evidence-based predictor of stable housing). Participants were asked "*During the past month, did you generally have enough money to cover (1) food, (2) clothing, (3) housing, (4) traveling around the city for things like shopping, medical appointments, or visiting friends and relatives, and (5) social activities like movies or eating in restaurants?*" (yes=1 or no=0). The mean number of covered expenditures (ranging from 0-5) was calculated.

Debts
The amount of debts (practice-based predictor of stable housing) was assessed at baseline. The amount of debts reported by participants showed a very skewed distribution with various outliers (range of the continuous data: 0-500,000 euros). Therefore, we dichotomised debts into '1000 euros or more' (high; > first quartile) and 'less than 1000 euros' (low; < first quartile). This cut-off between high and low debts were data-driven, as normative data for the amount of debts were not available.

Having a job/volunteer work
The Dutch abbreviated version of the Lehman QoL Interview (Wolf et al., 2002) was used at baseline to assess whether participants had a job (paid job or volunteer work) (yes=1 or no=2) (evidence-based predictor of stable housing).

Arrests
The Dutch abbreviated version of the Lehman QoL Interview (Wolf et al., 2002) was used at baseline to assess whether participants had been arrested in the past year (yes=1 or no=2) (evidence-based predictor of stable housing).

Social support
Social support (evidence-based predictor of stable housing) was assessed at baseline using five items derived from scales developed for the Medical Outcome Study (MOS) Social Support (Sherbourne & Stewart, 1991). Participants were asked to indicate how often different kinds of support were available to them through family and friends or other acquaintances, on a five-point scale ranging from "none of the time" to "all of the time". Two social support measures ranging from 0-5 were constructed by averaging across items: a family measure, and a friends and acquaintances measure. The MOS Social Support Survey has been used in studies among homeless people (Nyamathi, Leake, Keenan, & Gelberg, 2000; O'Toole, Gibbon, Hanusa, & Fine, 1999) and showed high convergent and discriminant validity and internal consistency (Sherbourne & Stewart 1991). The items selected for the present study have been successfully used in longitudinal research among homeless populations (Krabbenborg, Boersma, & Wolf, 2013; Lako et al., 2013).

Physical health
To measure physical health (practice-based predictor of stable housing), the number of self-reported physical complaints over the last 30 days was assessed at baseline on 20 categories of complaints. This included 14 categories based on the International Classification of Diseases (ICD) (World Health Organization, 1994), five categories of common complaints (visual, auditory, dental problems, foot problems, fractures) (Levy & O'Connell, 2004; O`Connell, 2004) and a final category 'health-related complaints not previously mentioned'.

Psychological distress
The Brief Symptom Inventory 18 (BSI-18) was used to measure anxiety, depression and somatisation (Derogatis, 2001) at baseline (evidence-based predictors of stable housing). We also included the BSI subscale 'hostility' as a practice-based predictor of stable housing. The BSI is a frequently used measure to evaluate psychological distress in studies among homeless populations (Ball, Cobb-Richardson, Connolly, Bujosa, & O'neall, 2005; Kashner et al., 2002; McCaskill, Toro, & Wolfe, 1998; Tsemberis, Kent, & Respress, 2012; Weinreb, Buckner, Williams, & Nicholson, 2006). The Dutch translation was used with (provisional) norm scores for the Dutch population (De Beurs, 2011). Participants were categorised into two groups: participants with a high level, and participants with less than a high level of anxiety, depression, somatisation and hostility. Participants were categorised as having a high level if they scored in the upper 20th percentile on a subscale compared with a Dutch community sample.

Substance use
Alcohol use (at least 5 units) and cannabis use (evidence-based predictors of stable housing) during the last month were assessed at baseline using the appropriate module from the European version of the Addiction Severity Index (Europ-ASI, version III) (Kokkevi & Hartgers, 1995). The Europ-ASI is frequently used in studies among homeless people with severe psychiatric and/or substance abuse problems (Kasprow & Rosenheck, 2007; Min, Wong, & Rothbard, 2004; Rosenheck, Resnick, & Morrissey, 2003). Studies among substance-abusing populations showed satisfactory results for the reliability and validity (Kokkevi & Hartgers, 1995). For each substance, the number of days used was assessed during the last 30 days. No other substances were taken into account due to the low prevalence rates (<5%) in this population (Van Straaten et al., 2015).

Unmet care needs
Unmet care needs (practice-based predictor of stable housing) were assessed at baseline using a questionnaire developed by Impuls - Netherlands Center for Social Care Research (Lako et al., 2013). The response categories were based on the format of the Short Form Quality of Life and Care questionnaire (QoLC) (Wennink & Wijngaarden, 2004). Unmet care needs (no help received though wanted) were considered on four life domains: living situation, finances, daily activities, and searching for work. All unmet care needs were summed up to a total unmet needs variable, ranging from 0-4. The questionnaire has been used in research among homeless youth (Krabbenborg et al., 2013).

Intellectual disability
To measure a suspected intellectual disability (practice-based predictor of stable housing), the Hayes Ability Screening Index (HASI) (Hayes, 2000) was used. The HASI is a brief screening index of intellectual abilities and was assessed at 6-month follow-up. It gives an indication of whether a person has an ID (IQ<70). The HASI shows a significant correlation with other psychometric tests measuring cognitive ability (Hayes, 2000). A cut-off score of 85 (Hayes, 2000) was used to distinguish between the group 'suspected intellectual disability' and the group 'no suspected intellectual disability'. The Dutch version of the HASI was translated and provided by the developers of the HASI.

Experience of self-determination
Experience of self-determination (practice-based predictor of stable housing) was measured by three basic psychological needs: feelings of autonomy, competence, and relatedness. These concepts were

measured at baseline by the three subscales of the Basic Psychological Needs questionnaire (Ilardi, Leone, And, & Ryan, 2006). Participants were asked to indicate their agreement with 21 items on a 7-point Likert scale, ranging from not true at all (1) to definitely true (7). The scale has been used previously among homeless young adults (Krabbenborg et al., 2013). Adequate factor structure, internal consistency, discriminant validity and predictive validity have been demonstrated (Vlachopoulos & Michailidou 2006; Johnston & Finney 2010). Three subscale scores ranging from 1-7 were constructed by averaging across the items of the subscale.

Statistical analysis

Chi-squared tests for categorical variables and a t-test for the continuous variable were used in order to a) obtain information about the representativeness of the study participants compared to the total population of homeless adults and young adults who reported themselves at a central access point for social relief in the four major cities in 2011, and b) compare respondents at follow-up with non-respondents at follow-up.

Descriptive analyses were performed to describe the demographic characteristics at baseline, and to describe the number of participants who were stably housed, and stably housed and satisfied with their housing status, at 2.5-year follow-up.

Univariate and multivariate logistic regression analyses were performed to examine predictors of both definitions of housing stability at 2.5-year follow-up. Characteristics that showed a tendency of association with housing stability (p<0.25) in the univariate analysis were inserted as independent predictors into an exploratory stepwise backward logistic regression model, to prevent exclusion of potentially important variables and the minimisation of type II errors in the selection process (Bursac, Gauss, Williams, & Hosmer, 2008; Mickey & Greenland, 1989). The results are reported as odds ratios (OR) with 95% confidence intervals (CI) and p-values. The Nagelkerke R^2 was reported as a measure of generalised variance explained by the model.

Multicollinearity among the predictors was examined by the variance inflation factor (VIF) and indicated by a VIF value >10. The model goodness of fit was tested with the Hosmer-Lemeshow test. Nagelkerke R^2 was reported.

Additionally, chi-squared tests for categorical variables and a t-test for the continuous variables were used in order to compare respondents at follow-up with non-respondents at follow-up on the significant variables which were derived from the stepwise backward logistic regression models.

All statistical analyses were conducted with IBM SPSS Statistics version 19.

6.4 Results

Of the initial cohort of 513 participants, 324 (63.2%) were also interviewed for the final follow-up measurement 2.5 years after shelter admission. We do not have information about the reasons for attrition of all 189 non-respondents. We compared respondents (n=324) with non-respondents (n=189) on demographic variables as reported at the first measurement. Compared to respondents, the non-respondents were younger (33.8 vs. 37.7 years) and more often had the lowest level of education (41.5% vs. 29.6%). There were no differences in terms of gender and ethnicity.

Characteristics of participants

Table 1a presents the baseline characteristics of the participants separately for those who were stably housed and those who were not stably housed at follow-up. Of those who were stably housed the majority were male (71.2%) and the mean age was 38.1 years; of these latter participants, 26.0% had the lowest education level (i.e. they completed primary education at the most) and the majority were from a non-native Dutch background (65.3%). Of those who were not stably housed the majority also were male (81.4%) and the mean age was 37.0 years. Of these participants, 37.3% had the lowest education level and the majority were from a non-native Dutch background (60.6%).

Table 1b presents the baseline characteristics of the participants separately for those who were stably housed and satisfied, and those who were not stably housed and satisfied. Of those who were stably housed and satisfied the majority were male (73.0%) and the mean age was 38.7 years. Of these latter participants, 25.5% had the lowest education level and the majority were from a non-native Dutch background (62.1%). Of those who were not stably housed and satisfied the majority were also male (76.3%) and the mean age was 37.0 years. Of these latter participants, 33.5% had the lowest education level and the majority were from a non-native Dutch background (64.7%).

Table 1a Baseline characteristics of the participants who were stably housed at follow-up (yes / no) and of the total group

	Stably housed								
	Yes			*No*			*Total group*		
Baseline characteristics	*N*	*n [%] / Mean (SD)*	*Range*	*N*	*n [%] / Mean (SD)*	*Range*	*N*	*n [%] / Mean (SD)*	*Range*
Age in years	222	38.1 (13.6)	18-71	102	37.0 (11.8)	18-64	324	37.7 (13.0)	18-71
Gender (% male)	222	158 [71.2%]		102	83 [81.4%]		324	241 [74.4%]	
Ethnicity (% non-native Dutch)	219	143 [65.3%]		99	60 [60.6%]		318	203 [63.8%]	
Education (% lowest)	219	57 [26.0%]		102	38 [37.3%]		321	95 [29.6%]	
Suspected intellectual disability (% yes)	215	69 [32.1%]		101	28 27.7%]		316	97 [30.7%]	
Accompanied by children (% yes)	222	23 [10.4%]		101	2 [2%]		323	25 [7.7%]	

	Stably housed								
	Yes			*No*			*Total group*		
Baseline characteristics	*N*	*n [%] / Mean (SD)*	*Range*	*N*	*n [%] / Mean (SD)*	*Range*	*N*	*n [%] / Mean (SD)*	*Range*
Somatisation (% high level)	220	62 [28.2%]		100	48 [48%]		320	110 [34.4%]	
Anxiety (% high level)	220	70 [31.8%]		101	43 [42.6%]		321	113 [35.2%]	
Depression (% high level)	218	82 [37.6%]		101	46 [45.5%]		319	128 [40.1%]	
Physical health complaints	221	2.9 (2.4)	0-11	102	3.0 (2.5)	0-15	323	2.9 (2.4)	0-15
Cannabis use (days in the past 30 days)	221	7.4 (11.6)	0-30	101	9.3 (11.9)	0-30	322	8.0 (11.7)	0-30
Alcohol use, ≥ five glasses (days in the past 30 days)	222	2.4 (6.3)	0-30	100	5.0 (9.5)	0-30	322	3.2 (7.5)	0-30
Social support family	217	2.9 (1.3)	1-5	97	2.8 (1.4)	1-5	314	2.8 (1.3)	1-5
Social support friends	222	3.2 (1.0)	1-5	102	3.0 (1.2)	1-5	324	3.1 (1.1)	1-5
Unmet care needs	220	1.2 (1.1)	0-4	102	1.5 (1.1)	0-4	322	1.3 (1.1)	0-4
Arrested in past 12 months (% yes)	218	50 [22.9%]		100	48 [48%]		318	98 [30.8%]	
Duration of homelessness (months)	222	25.2 (37.3)	0-252	102	40.0 (55.3)	0-324	324	29.9 (44.2)	0-324
Resources for basic needs	221	2.2 (1.8)	0-5	102	2.0 (1.8)	0-5	323	2.2 (1.8)	0-5
Debts (% 1000 euros or more)	189	135 [71.4%]		87	70 [80.5%]		276	205 [74.3%]	
Having a job/ volunteer work (% yes)	222	137 [61.7%]		102	55 [53.9%]		324	192 [59.3%]	
Autonomy	220	4.8 (0.96)	2.0-7.0	102	4.7 (1.0)	2.0-6.6	322	4.8 (1.0)	2.0-7.0
Competence	219	4.8 (0.95)	1.5-6.8	102	4.6 (1.0)	2.3-6.5	321	5.0 (1.0)	1.5-6.8
Relatedness	220	5.0 (0.79)	1.4-7.0	102	4.8 (0.9)	1.9-6.6	322	5.0 (0.85)	1.4-7.0

Table 1b Baseline characteristics of the participants who were stably housed and satisfied with the housing status at follow-up (yes / no) and of the total group

	Stably housed and satisfied with housing status								
	Yes			*No*			*Total group*		
Baseline characteristics	*N*	*n [%] / Mean (SD)*	*Range*	*N*	*n [%] / Mean (SD)*	*Range*	*N*	*n [%] / Mean (SD)*	*Range*
Age in years	163	38.7 (13.7)	18-71	156	37.0 (12.2)	18-68	319	37.8 (13.0)	18-71
Gender (% male)	163	119 [73.0%]		156	119 [76.3%]		319	238 [74.6%]	
Ethnicity (% non-native Dutch)	161	100 [62.1%]		153	99 [64.7%]		314	199 [63.4%]	
Education (% lowest)	161	41 [25.5%]		155	52 [33.5%]		316	93 [29.4%]	
Suspected intellectual disability (% yes)	157	50 [31.8%]		155	45 [29.0%]		312	95 [30.4%]	
Accompanied by children (% yes)	163	16 [9.8%]		155	9 [5.8%]		318	25 [7.9%]	
Hostility (% high level)	160	38 [23.8%]		156	46 [29.5%]		316	84 [26.6%]	
Somatisation (% high level)	161	42 [26.1%]		154	67 [43.5%]		315	109 [34.6%]	
Anxiety (% high level)	161	53 [32.9%]		155	60 [38.7%]		316	113 [35.8%]	
Depression (% high level)	160	59 [36.9%]		154	68 [44.2%]		314	127 [40.4%]	
Physical health complaints	162	2.8 (2.2)	0-9	156	3.1 (2.6)	0-15	318	2.9 (2.4)	0-15
Cannabis use (days in the past 30 days)	162	7.6 (11.7)	0-30	155	8.3 (11.8)	0-30	317	8.0 (11.7)	0-30
Alcohol use, ≥ five glasses (days in the past 30 days)	163	2.3 (6.2)	0-30	154	4.2 (8.7)	0-30	317	3.2 (7.6)	0-30
Social support family	159	2.9 (1.3)	1-5	150	2.8 (1.3)	1-5	309	2.9 (1.3)	1-5
Social support friends	163	3.2 (1.1)	1-5	156	3.0 (1.1)	1-5	319	3.1 (1.1)	1-5
Unmet care needs	161	1.2 (1.2)	0-4	156	1.4 (1.1)	0-4	317	1.3 (1.1)	0-4

	Stably housed and satisfied with housing status								
	Yes			*No*			*Total group*		
Baseline characteristics	*N*	*n [%] / Mean (SD)*	*Range*	*N*	*n [%] / Mean (SD)*	*Range*	*N*	*n [%] / Mean (SD)*	*Range*
Duration of homelessness (months)	163	26.6 (38.3)	0-252	156	32.9 (49.6)	0-324	319	29.7 (44.3)	0-324
Resources for basic needs	162	2.2 (1.8)	0-5	156	2.1 (1.8)	0-5	318	2.2 (1.8)	0-5
Debts (% 1000 euros or more)	139	95 [68.3%]		132	108 [81.8%]		271	203 [74.9%]	
Having a job/ volunteer work (% yes)	163	101 [62.0%]		156	87 [55.8%]		319	188 [58.9%]	
Autonomy	161	4.9 (0.9)	2.3-6.4	156	4.7 (1.0)	2-7	317	4.8 (1.0)	2-7
Competence	160	4.8 (0.9)	1.5-6.3	156	4.7 (1.0)	1.7-6.8	316	4.7 (1.0)	1.5-6.8
Relatedness	161	5.0 (0.7)	3.0-6.4	156	4.9 (0.9)	1.4-7	317	5.0 (0.8)	1.4-7.0

Housing stability

At baseline, none of the participants were stably housed. At 2.5-year follow-up, 222 participants (68.5%) were stably housed and 163 participants (51.1%) were stably housed and satisfied with their housing status (Figure 1). Thus, of all participants, 59 participants (17.4%) were stably housed but not satisfied with their housing situation.

The unstably housed participants (*n*=102, 31.5%) were residing in an institution (*n*=56, 17.3%, e.g. residential shelters), were marginally housed (*n*=22, 6.8%; e.g. staying temporarily with friends, relatives or acquaintances), were homeless (*n*=8, 2.5%; e.g. night shelter or transitional accommodation), or were housed for a period of < 90 days (*n*=16, 5.0%).

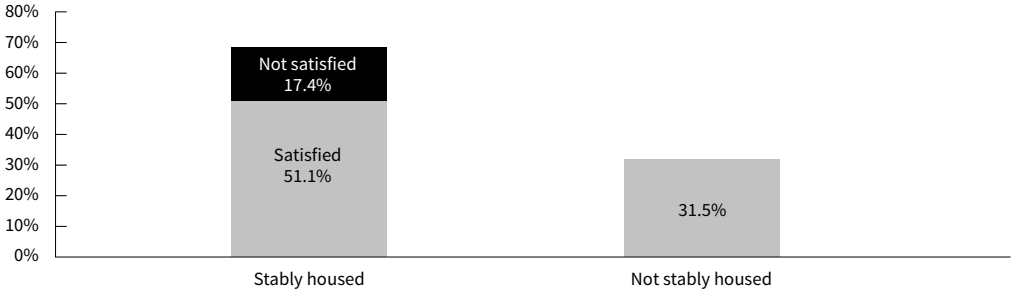


Figure 1 At 2.5-year follow-up: percentage of participants who are stably housed (*n*=324); participants who are stably housed and satisfied with their housing status (*n*=319); and participants who are unstably housed

Predictors of housing stability

Univariate analyses revealed that being male, having the lowest education level, a high level of hostility, somatisation, anxiety and depression, cannabis use, alcohol use, unmet care needs, being arrested, a longer duration of homelessness and having debts of 1000 euros or more showed a tendency of a negative association with housing stability (p<0.25), whereas being accompanied by children, social support by friends, having a job or volunteer work, and feelings of autonomy, competence and relatedness showed a tendency of a positive association with housing stability (Table 2). A backward stepwise multivariate logistic regression indicated that being arrested (OR=0.36), a high level of somatisation (OR=0.52), and unmet care needs (OR=0.77) were independent negative predictors of housing stability at follow-up (Table 3).

Predictors of housing stability including being satisfied with the housing status

Univariate analyses revealed that having the lowest education level, a high level of hostility, somatisation and depression, physical health complaints, alcohol use, having been arrested, a longer duration of homelessness, and having debts of 1000 euros or more, showed a tendency of a negative association with housing stability including satisfaction with the housing status (p<0.25), while age, accompanied by children, social support by friends, and feelings of autonomy, competence and relatedness, showed a tendency of a positive association with housing stability including satisfaction with the housing status (Table 2). A backward stepwise multivariate logistic regression indicated that, of the variables listed above, having been arrested (OR=0.43), having higher debts (OR=0.45) and a high level of somatisation (OR=0.49) were independent negative predictors of being stably housed and satisfied with the housing status at 2.5-year follow-up (Table 3). Because 48 participants could not provide data on debts (they did not know the extent of their debts), these participants were excluded in the final models. However, additional analysis revealed that excluding these participants had no significant effect on the results.

Table 2 Univariate logistic regression analysis for 'stably housed' and 'stably housed and satisfied with housing status' at follow-up

Candidate predictors	Stably housed			Stably housed and satisfied with housing status		
	OR	*95% CI*	*p*	*OR*	*95% CI*	*p*
Age	1.00	0.99-1.02	0.517	1.01	0.99-1.03	0.249 •
Gender (female=ref)	0.57	0.32-1.00	0.053 •	0.84	0.51-1.39	0.502
Ethnicity (native Dutch=ref)	1.22	0.75-2.00	0.420	0.89	0.57-1.42	0.633
Education (higher than lowest=ref)	0.59	0.36-0.98	0.041 •	0.68	0.42-1.10	0.116 •
Suspected intellectual disability (no=ref)	1.23	0.73-2.08	0.433	1.14	0.71-1.85	0.589

Candidate predictors	Stably housed			Stably housed and satisfied with housing status		
	OR	*95% CI*	*p*	*OR*	*95% CI*	*p*
Accompanied by children (no=ref)	5.72	1.32-24.76	0.020 •	1.77	0.76-4.12	0.189 •
Hostility (< high level=ref)	0.64	0.38-1.07	0.087 •	0.75	0.45-1.23	0.249 •
Somatisation (< high level=ref)	0.43	0.26-0.69	0.001 •	0.46	0.29-0.74	0.001 •
Anxiety (< high level=ref)	0.63	0.39-1.02	0.062 •	0.78	0.49-1.23	0.283
Depression (< high level=ref)	0.72	0.45-1.16	0.180 •	0.74	0.47-1.61	0.189 •
Physical health complaints	0.98	0.89-1.07	0.610	0.94	0.86-1.03	0.189 •
Cannabis use	0.99	0.97-1.00	0.196 •	1.00	0.98-1.01	0.612
Alcohol use, five glasses or more	0.96	0.93-0.99	0.005 •	0.97	0.94-1.00	0.030 •
Social support family	1.05	0.88-1.26	0.576	1.02	0.87-1.21	0.781
Social support friends	1.20	0.97-1.49	0.096 •	1.13	0.92-1.38	0.239 •
Unmet care needs	0.81	0.66-1.00	0.053 •	0.90	0.74-1.10	0.315
Arrested in past 12 months (no=ref)	0.32	0.20-0.53	<0.001 •	0.40	0.25-0.66	<0.001 •
Duration of homelessness (months)	0.99	0.99-1.00	0.008 •	1.00	0.99-1.00	0.211 •
Resources for basic needs	1.06	0.93-1.20	0.415	1.03	0.91-1.17	0.625
Debts (< 1000 euros=ref)	0.61	0.33-1.13	0.113 •	0.48	0.27-0.85	0.011 •
Having a job/volunteer work (no=ref)	1.38	0.86-2.21	0.186 •	1.29	0.83-2.02	0.261
Autonomy	1.20	0.94-1.52	0.146 •	1.23	0.98-1.55	0.074 •
Competence	1.26	0.99-1.61	0.065 •	1.20	0.95-1.51	0.121 •
Relatedness	1.31	1.00-1.74	0.050 •	1.24	0.95-1.61	0.114 •

OR=Odds Ratio; CI=Confidence Interval; ref=reference category
• Indicates that the predictor was selected for the multivariate logistic regression analysis (p<0.25)

Table 3 Multivariate logistic regression analysis for 'stably housed' and 'stably housed and satisfied with housing status' at follow-up

Predictor	Stably housed [2] (*n*=261)			Stably housed and satisfied with housing status [3] (*n*=256)		
	OR	*95% CI*	*p*	*OR*	*95% CI*	*p*
Somatisation (< high level=ref)	0.52	0.30-0.91	0.022	0.49	0.28-0.84	0.009
Unmet care needs	0.77	0.60-0.99	0.038	-[1]	-	-
Arrested in past 12 months (no=ref)	0.36	0.20-0.63	<0.001	0.43	0.25-0.75	0.003
Debts (< 1000 euros=ref)	-	-	-	0.45	0.24-0.84	0.012
	Nagelkerke R^2=0.13			Nagelkerke R^2=0.12		

OR=Odds Ratio; CI=Confidence Interval; ref=reference category
[1] Unmet care needs were not univariately associated with 'Stably housed and satisfied with housing status' (p>0.25) and were not included in the multivariate model.
[2] The Hosmer-Lemeshow test for goodness of fit was not significant (p=0.58), implying good model fit. All of the VIF values for the predictors were <10, indicating that there was no multicollinearity in the model.
[3] The Hosmer-Lemeshow test for goodness of fit was not significant (p=0.75), implying good model fit. All of the VIF values for the predictors were <10, indicating that there was no multicollinearity in the model.

As mentioned above, of the initial cohort of 513 participants, 324 (63.2%) were also interviewed for the final follow-up measurement 2.5 years after shelter admission. To investigate whether there was selective drop-out on the significant predictors in the two regression models (i.e. somatisation, unmet care needs, arrested in the past 12 months, and debts), we additionally compared respondents with non-respondents on these variables. This analysis revealed that there were no differences in terms of somatisation, unmet care needs, arrested in the past 12 months and debts, between respondents and non-respondents.

6.5 Discussion

This study shows that 68.5% of a cohort of Dutch homeless people who reported to a central access point for social relief in 2011 were stably housed at 2.5-year follow-up. This implies that 31.5% of the participants is still unstably housed at 2.5-year follow-up. This prevalence of housing stability among our participants is similar to that of previous studies among homeless people in Canada (Aubry et al., 2012) and the US (Orwin et al., 2005). When we included the perspective of the initially homeless people in the definition of housing stability, we found that 51.1% were stably housed and satisfied with their housing status. As 31.5% of our participants were still unstably housed 2.5 years after shelter admission and almost 50% were not stably housed and satisfied with their housing status, prevention of chronic homelessness is essential.

Predictors of housing stability

We identified several independent predictors (as assessed at baseline) of housing stability at 2.5-year follow-up. For both definitions of housing stability, being arrested and having a high level of somatisation were negative predictors of housing stability. Regarding stable housing and being satisfied with the housing status, having higher debts was also a negative predictor, whereas for stable housing without inclusion of the homeless people's perspective, unmet care needs was also a negative predictor of stable housing. Of all significant predictors, being arrested was the strongest predictor; arrest history has previously been reported to be an important predictor of homelessness (Caton et al., 2005; Mizuno et al., 2009; Riley et al., 2007). In addition, the chance of reoffending is higher when suitable housing is not available upon release (Loucks, 2007), which could cause a negative cycle. Screening homeless people on arrest history, gaining insight into how they became homeless after their arrest, and offering them extensive support may help to improve the rate of housing stability among this subgroup. Regarding the prevention of chronic homelessness, this finding stresses the importance of comprehensive aftercare programmes for offenders.

Only one psychological factor was independently associated with housing stability, namely somatisation (physical manifestations of psychological distress). Longitudinal research on primary care patients shows that somatisation contributes substantially to disability, e.g. on the domains 'participation in society' and 'household and work activities' (van der Leeuw et al., 2015). This may explain the lower prevalence of housing stability among participants with a high level of somatisation in the present study. A future qualitative study would help elucidate the underlying reasons and processes with regard to the predictors of stable housing.

Predictors of housing stability including satisfaction with the housing status

Although two of the three independent predictors of stable housing were the same for the two definitions, there was also a difference. Having higher debts was a practised-based negative predictor for stable housing including satisfaction with the housing status, but not for stable housing without the perspective of homeless persons. High debts may hamper satisfaction with housing for several reasons. That fewer participants with high debts that were stably housed and satisfied with their housing status may be caused by fear of visits from debt collectors, which may have a negative impact on satisfaction with housing. Households experiencing a high level of financial stress are more likely to be dissatisfied with their housing (Bruin & Cook, 1997). Debts may also negatively affect overall quality of life, including housing-related quality of life.

How relevant is the addition of a subjective component to the definition of housing stability?

Inclusion of a subjective component in the definition of housing stability revealed a subgroup of stably housed participants who were not satisfied with their housing status. This subgroup consisted of 17.4% of all participants who were 'objectively' stably housed but were not satisfied with their housing situation. Therefore, including the perspective of homeless people seems a relevant addition to the customary definition of housing stability. The chance of long-term housing stability is likely to be lower among this subgroup, as also found in a study reporting a positive relation between housing satisfaction and residential stability (i.e. no change in residence) (Srebnik et al., 1995). To improve care services, studies need to investigate why this subgroup is not satisfied with their current housing situation. After clarifying these factors, appropriate steps can be taken to promote satisfaction and thereby housing stability.

Relevance of practice-based predictors

In our study 'unmet care needs' and 'having high debts' were significant negative predictors of housing stability 2.5 years later. As these variables are generally not included in studies predicting housing stability among the homeless, this suggests that exploring characteristics based on recommendations made by professionals in the field of social care could be a relevant addition to using only evidence-based characteristics in prediction studies.

Strengths and weaknesses

Strengths of our study include the relatively large sample size of homeless people, the availability of follow-up data, and inclusion of the perspective of homeless people themselves, which is generally lacking. However, a few limitations need to be addressed. The first is related to the subgroup of the population of homeless people that was studied, i.e. only those who reported to a central access point for social relief in 2011 in one of the four major Dutch cities and were accepted to start an individual programme plan. As stated above, it is obligatory for every homeless person to report to a central access point for social relief in order to gain access to social relief facilities. Therefore, a substantial part of the homeless population is covered by this selection criterion. Subgroups not included in this study were undocumented homeless people and homeless people who do not make use of social relief facilities. A second limitation was the selective non-response at follow-up of participants who were younger and had the lowest level of education at baseline. Especially lowest level of education was univariately negatively related with stable housing. Therefore, if selective loss to follow-up has biased our findings, it might have resulted in an overestimation of the prevalence of stably housed participants and an underestimation of the strength of the relation between the lowest level of education and stable housing because of reduced statistical power. However, there were no differences in terms of somatisation, unmet care needs, arrested in the past 12 months and debts between respondents and non-respondents at follow-up, which strengthens the findings from the regression models. Thirdly, we dichotomised various predictors because they showed skewed distributions (debts) or because norm scores were available (psychological distress). An advantage of dichotomisation is that it allows a more meaningful interpretation of the findings and encourages a 'risk factor' approach, which helps in targeting intervention efforts (Farrington & Loeber 2000). However, there are also important drawbacks of dichotomising variables. These include loss of information, loss of power and the potential to overlook non-linear relationships (MacCallum, Zhang, Preacher, & Rucker, 2002). The results must be interpreted in the light of these issues.
We used the stepwise selection method for the selection of variables in the multivariate models. Shortcomings of this method include overfitting (Babyak, 2004), bias in parameter estimation and an inappropriate reliance on a single best model (Whittingham, Stephens, Bradbury, & Freckleton, 2006). However, for exploratory model building (as used in this study), stepwise regression is acceptable (Field, 2005). Also, by using a liberal criterion p-value in the univariate analysis (i.e. $p<0.25$), it is more likely that truly important predictors will be retained in the model when using stepwise methods (Babyak,

2004) and that type II errors will be minimised (Mickey & Greenland 1989; Bursac et al. 2008). In addition, with regard to standard logistic regression, it is recommended that the included predictors be based on *'good theoretical reasons for including the chosen predictors'* (Field, 2005). As we aimed to explore several variables which were not previously investigated, a stepwise method seemed more appropriate. Nevertheless, replication of this exploratory study is needed.
Finally, the relatively low percentage of generalised explained variance of the models predicting stable housing (12% and 13%) might follow from the result that only three variables were included in the final models, but may also indicate that other relevant factors that play a role in predicting stable housing were not included, e.g. features of the housing system and housing policies.

Conclusion

Among this cohort of Dutch homeless people, 68.5% were stably housed at follow-up and 51.1% were stably housed and satisfied with their housing status at 2.5-year follow-up.
Because inclusion of the perspective of homeless persons revealed a subgroup of stably housed participants who were not satisfied with their housing status, inclusion of housing satisfaction seems a relevant addition to the customary definition of housing stability. Incorporating the perspective of homeless individuals also fits the current focus (in both research and policymaking) on the client's perspective. Participants with characteristics negatively associated with housing stability and satisfaction with their housing status (e.g. having been arrested, high debts and a high level of somatisation) should receive more extensive and individually tailored support services to facilitate achievement of housing stability.

6.6 References

Altena, A. M., Beijersbergen, M. D., & Wolf, J. R. L. M. (2014). Homeless youth's experiences with shelter and community care services: Differences between service types and the relationship to overall service quality. *Children and Youth Services Review*, 46, 195–202. doi:10.1016/j.childyouth.2014.08.019

Aubry, T., Klodawsky, F., & Coulombe, D. (2012). Comparing the housing trajectories of different classes within a diverse homeless population. *American Journal of Community Psychology*, 49(1-2), 142–55. doi:10.1007/s10464-011-9444-z

Babyak, M. A. (2004). What you see may not be what you get: a brief, nontechnical introduction to overfitting in regression-type models. *Psychosomatic Medicine*, 66(3), 411–421. doi:10.1097/01.psy.0000127692.23278.a9

Ball, S. A., Cobb-Richardson, P., Connolly, A. J., Bujosa, C. T., & O'neall, T. W. (2005). Substance abuse and personality disorders in homeless drop-in center clients: symptom severity and psychotherapy retention in a randomized clinical trial. *Comprehensive Psychiatry*, 46(5), 371–9. doi:10.1016/j.comppsych.2004.11.003

Bruin, M. J., & Cook, C. C. (1997). Understanding constraints and residential satisfaction among low-income single-parent families. *Environment and Behavior*, 29(4), 532–553. doi:0803973233

Bursac, Z., Gauss, C. H., Williams, D. K., & Hosmer, D. W. (2008). Purposeful selection of variables in logistic regression. *Source Code for Biology and Medicine*, 3, 17. doi:10.1186/1751-0473-3-17

Caton, C. L. M., Dominguez, B., Schanzer, B., Hasin, D. S., Shrout, P. E., Felix, A., … Hsu, E. (2005). Risk factors for long-term homelessness: findings from a longitudinal study of first-time homeless single adults. *American Journal of Public Health*, 95(10), 1753–9. doi:10.2105/AJPH.2005.063321

De Beurs, E. (2011). *Brief Symptom Inventory 18 -BSI 18- Handleiding herziene editie*. Leiden: PITS.

Derogatis, L. R. (2001). *Brief Symptom Inventory (BSI)-18. Administration, scoring and procedures manual*. Minneapolis: NCS Pearson, Inc.

Dutch Government and four major cities. (2011). *Strategy Plan for Social Relief, Phase 2.*

Farrington, D. P., & Loeber, R. (2000). Some benefits of dichotomization in psychiatric and criminological research. *Criminal Behaviour and Mental Health*, 10(2), 100–122. doi:10.1002/cbm.349

FEANTSA. (2010). *Ending Homelessness: A Handbook for Policy Makers*. Brussels.

Field, A. (2005). *Discovering Statistics Using SPSS* (second edi.). London: SAGE Publications Ltd.

Hayes, S. (2000). *Hayes Ability Screening Index (HASI) manual. Behavioural sciences in medicine*. Sydney.

Hser, Y.-I., Evans, E., Huang, D., & Anglin, D. M. (2004). Relationship Between Drug Treatment Services, Retention, and Outcomes. *Psychiatric Services*, 55(7), 767–774.

Ilardi, B. C., Leone, D., And, T. K., & Ryan, R. M. (2006). Employee and Supervisor Ratings of Motivation: Main Effects and Discrepancies Associated with Job Satisfaction and Adjustment in a Factory Setting. *Journal of Applied Social Psychology*, *23*(21), 1789–1805.

Johnston, M. M., & Finney, S. J. (2010). Measuring basic needs satisfaction: Evaluating previous research and conducting new psychometric evaluations of the Basic Needs Satisfaction in General Scale. *Contemporary Educational Psychology*, *35*(4), 280–296.

Kashner, T. M., Rosenheck, R., Campinell, A. B., Surís, A., Crandall, R., Garfield, N. J., … Wicker, A. (2002). Impact of Work Therapy on Health Status Among Homeless, Substance-Dependent Veterans. A Randomized Controlled Trial. *Archives of General Psychiatry*, 59(10), 938. doi:10.1001/archpsyc.59.10.938

Kasprow, W. J., & Rosenheck, R. A. (2007). Outcomes of critical time intervention case management of homeless veterans after psychiatric hospitalization. *Psychiatric Services (Washington, D.C.)*, 58(7), 929–35. doi:10.1176/appi.ps.58.7.929

Kokkevi, A., & Hartgers, C. (1995). EuropASI: European Adaptation of a Multidimensional Assessment Instrument for Drug and Alcohol Dependence. *European Addiction Research*, 1(4), 208–210. doi:10.1159/000259089

Krabbenborg, M. A. M., Boersma, S. N., & Wolf, J. R. L. M. (2013). A strengths based method for homeless youth: effectiveness and fidelity of Houvast. *BMC Public Health*, 13, 359. doi:10.1186/1471-2458-13-359

Lako, D. A., de Vet, R., Beijersbergen, M. D., Herman, D. B., van Hemert, A. M., & Wolf, J. R. (2013). The effectiveness of critical time intervention for abused women and homeless people leaving Dutch shelters: study protocol of two randomised controlled trials. *BMC Public Health*, 13(1), 555. doi:10.1186/1471-2458-13-555

Lehman, A. F., Dixon, L. B., Kernan, E., DeForge, B. R., & Postrado, L. T. (1997). *A randomized trial of assertive community treatment for homeless persons with severe mental illness. Archives of general psychiatry* (Vol. 54). doi:10.1001/archpsyc.1997.01830230076011

Levy, B. D., & O'Connell, J. J. (2004). Health Care for Homeless Persons. *The New England Journal of Medicine*, 350(23), 2329–2332.

Loucks, N. (2007). *Housing Needs of Prisoners and Ex-Prisoners*. Glasgow.

MacCallum, R. C., Zhang, S., Preacher, K. J., & Rucker, D. D. (2002). On the practice of dichotomization of quantitative variables. *Psychological Methods*, 7(1), 19–40. doi:10.1037/1082-989X.7.1.19

McCaskill, P. A., Toro, P. A., & Wolfe, S. M. (1998). Homeless and matched housed adolescents: a comparative study of psychopathology. *Journal of Clinical Child Psychology*, 27(3), 306–19. doi:10.1207/s15374424jccp2703_7

Mickey, J., & Greenland, S. (1989). A study of the impact of confounder-selection criteria on effect estimation. *American Journal of Epidemiology*, 129(1), 125–137.

Min, S.-Y., Wong, Y. L. I., & Rothbard, A. B. (2004). Outcomes of Shelter Use Among Homeless Persons With Serious Mental Illness. *Psychiatric Services*, 55(3), 284–289. doi:10.1176/appi.ps.55.3.284

Mizuno, Y., Purcell, D. W., Zhang, J., Knowlton, A. R., De Varona, M., Arnsten, J. H., & Knight, K. R. (2009). Predictors of current housing status among HIV-seropositive injection drug users (IDUs): Results from a 1-year study. *AIDS and Behavior*, 13, 165–172. doi:10.1007/s10461-008-9364-6

North, C. S., Eyrich-Garg, K. M., Pollio, D. E., & Thirthalli, J. (2010). A prospective study of substance use and housing stability in a homeless population. *Social Psychiatry and Psychiatric Epidemiology*, 45(11), 1055–62. doi:10.1007/s00127-009-0144-z

Nyamathi, A., Leake, B., Keenan, C., & Gelberg, L. (2000). Type of social support among homeless women: Its impact on psychosocial resources, health and health behaviors, and use of health services. *Nursing Research*, 49(6), 318–326.

O`Connell, J. J. (2004). Dying in the shadows: the challenge of providing health care for homeless people. *Canadian Medical Association Journal*, 170(8), 1251–1252.

O'Toole, T. P., Gibbon, J. L., Hanusa, B. H., & Fine, M. J. (1999). Utilization of Health Care Services among Subgroups of Urban Homeless and Housed Poor. *Journal of Health Politics, Policy and Law*, 24(1), 91–114.

Orwin, R. G., Scott, C. K., & Arieira, C. (2005). Transitions through homelessness and factors that predict them. *Journal of Substance Abuse Treatment*, 28(2), S23–S39. doi:10.1016/j.jsat.2004.10.011

Palepu, A., Marshall, B. D. L., Lai, C., Wood, E., & Kerr, T. (2010). Addiction treatment and stable housing among a cohort of injection drug users. *PloS One*, 5(7), e11697. doi:10.1371/journal.pone.0011697

Pollio, D., North, C. S., Thompson, S., Paquin, J., & Spitznagel, E. (1997). Predictors of achieving stable housing in a mentally ill homeless population. *Psychiatric Services*, 48(4). Retrieved from journals.psychiatryonline.org/data/Journals/PSS/3466/528.pdf

Riley, E. D., Weiser, S. D., Sorensen, J. L., Dilworth, S., Cohen, J., & Neilands, T. B. (2007). Housing patterns and correlates of homelessness differ by gender among individuals using San Francisco free food programs. *Journal of Urban Health*, 84(3), 415–422. doi:10.1007/s11524-006-9153-3

Rosenheck, R. A., Resnick, S. G., & Morrissey, J. P. (2003). Closing service system gaps for homeless clients with a dual diagnosis: integrated teams and interagency cooperation. *The Journal of Mental Health Policy and Economics*, 6(2), 77–87. Retrieved from www.ncbi.nlm.nih.gov/pubmed/14578540

Ryan, R. M., Patrick, H., Deci, E. L., & Williams, G. C. (2008). Facilitating health behaviour change and its maintenance : Interventions based on Self-Determination Theory. *The European Health Psychologist*, 10, 2–5.

Sherbourne, C. D., & Stewart, A. L. (1991). The Mos Social Support Survey, 32(6), 705–714.

Srebnik, D., Livingston, J., Gordon, L., & King, D. (1995). Housing choice and community success for individuals with serious and persistent mental illness. *Community Mental Health Journal*, 31(2), 139–152. doi:10.1007/BF02188763

Sullivan, G., Burnam, A., Koegel, P., & Hollenberg, J. (2000). Quality of life of homeless persons with mental illness: results from the course-of-homelessness study. *Psychiatric Services (Washington, D.C.)*, 51(9), 1135–1141. doi:10.1176/appi.ps.51.9.1135

Tsemberis, S., Kent, D., & Respress, C. (2012). Housing stability and recovery among chronically homeless persons with co-occuring disorders in Washington, DC. *American Journal of Public Health*, 102(1), 13–6. doi:10.2105/AJPH.2011.300320

Tuynman, M., & Planije, M. (2012). *Monitor Plan van Aanpak Maatschappelijke Opvang. Rapportage 2011: Amsterdam, Rotterdam, Den Haag en Utrecht*.

van der Leeuw, G., Gerrits, M. J., Terluin, B., Numans, M. E., van der Feltz-Cornelis, C. M., van der Horst, H. E., … van Marwijk, H. W. J. (2015). The association between somatization and disability in primary care patients. *Journal of Psychosomatic Research*. doi:10.1016/j.jpsychores.2015.03.001

Van Straaten, B., Rodenburg, G., Van der Laan, J., Boersma, S., Wolf, J., & Van de Mheen, D. (2015). Substance use among Dutch homeless people, a follow-up study: Prevalence, pattern and housing status. *European Journal of Public Health*, ckv142. doi:10.1093/eurpub/ckv142

Vlachopoulos, S. P., & Michailidou, S. (2006). Development and Initial Validation of a Measure of Autonomy, Competence, and Relatedness in Exercise: The Basic Psychological Needs in Exercise Scale. *Measurement in Physical Education and Exercise Science*, 10(3), 179–201.

Weinreb, L. F., Buckner, J. C., Williams, V., & Nicholson, J. (2006). A comparison of the health and mental health status of homeless mothers in Worcester, Mass: 1993 and 2003. *American Journal of Public Health*, 96(8), 1444–8. doi:10.2105/AJPH.2005.069310

Wennink, J., & Wijngaarden, B. V. (2004). *Quality of life and care (QoLC). Kwaliteit van leven en vervulling zorgwensen [Quality of Life and Care (QoLC). Quality of life and fulfilling of care needs]*. Utrecht.

Whittingham, M. J., Stephens, P. A., Bradbury, R. B., & Freckleton, R. P. (2006). Why do we still use stepwise modelling in ecology and behaviour. *J. An. Ecol.*, 75(5), 1182–1189.

Wolf, J., Zwikker, M., Nicholas, S., Van Bakel, H., Reinking, D., & Van Leiden, I. (2002). *Op achterstand. Een onderzoek naar mensen in de marge van Den Haag*. Utrecht.

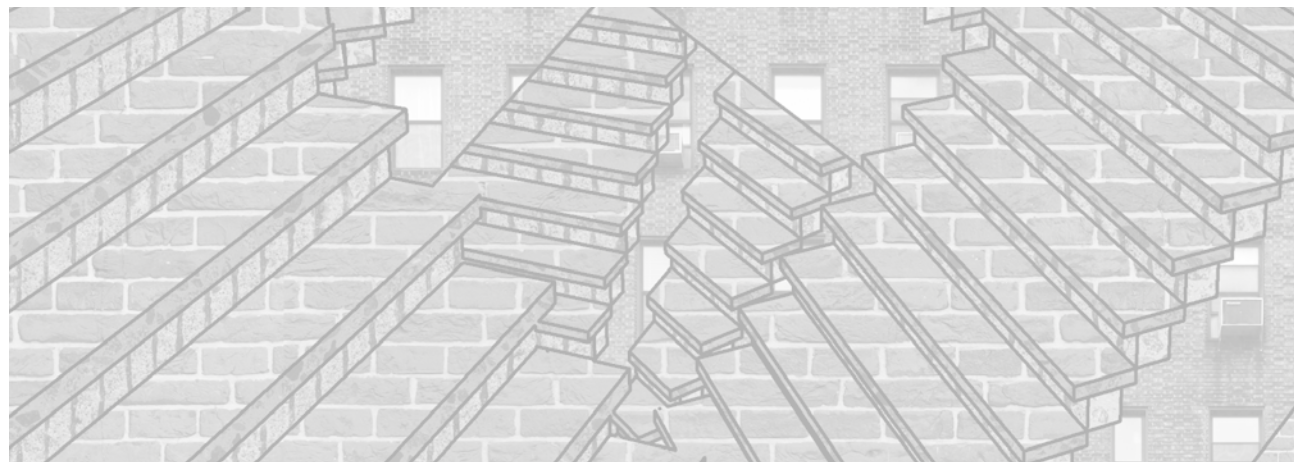
World Health Organization. (1994). *International Classification of Diseases (ICD)*.

Zlotnick, C., Robertson, M. J., & Lahiff, M. (1999). Getting off the streets: Economic resources and residential exits from homelessness. *Journal of Community Psychology*, 27(2), 209–224.

chapter 7

exclusion

Changes in indicators of social exclusion among homeless people over a 2.5-year period



Changes in indicators of social exclusion among homeless people over a 2.5-year period

Barbara Van Straaten, Gerda Rodenburg, Jorien Van der Laan, Sandra N. Boersma, Judith R.L.M. Wolf, Dike Van de Mheen

[in revision]

7.1 Abstract

Although homelessness is inherently associated with social exclusion, homeless individuals are rarely included in conventional studies on social exclusion. Use of longitudinal survey data from a cohort study on homeless people in four major Dutch cities (*n*=378) allowed to examine: changes in indicators of social exclusion among homeless people over a 2.5-year period after reporting to the social relief system, and associations between changes in indicators of social exclusion and changes in psychological distress. Multinomial logistic regression analysis was applied to investigate the associations between changes in indicators of social exclusion and changes in psychological distress. Improvements were found in various indicators of social exclusion, whereas financial debts showed no significant improvement. Changes in unmet care needs, health insurance, social support from family and relatedness to others were related to changes in psychological distress. This study demonstrated improvements in various indicators of social exclusion among homeless people over a period of 2.5 years, and sheds light on the concept of social exclusion in relation to homelessness.

7.2 Introduction

Homelessness is inherently associated with social exclusion because the characteristics intertwined with homelessness, such as lack of housing, financial debts and lack of social support (Fazel, Geddes, & Kushel, 2014; Tsai, Mares, & Rosenheck, 2012; Van Laere, de Wit, & Klazinga, 2009) are also considered components of social exclusion (Jehoel-Gijsbers & Vrooman, 2007; Morgan, Burns, Fitzpatrick, Pinfold, & Priebe, 2007; Vrooman & Hoff, 2013). Homeless individuals can be considered one of the most extreme socially excluded groups in society (European Commission, 2009). However, homeless persons are rarely included in conventional studies on social exclusion mainly because they are not a member of a conventional household, which is frequently used as a sample framework in studies on social exclusion (Popay et al., 2008). Therefore, extra attention should be paid to homeless people in research on social exclusion.

Social exclusion

Social exclusion refers to people who experience an accumulation of disadvantages in society (Vrooman & Hoff, 2013) and is regarded as a multidimensional concept (Coumans & Schmeets, 2015; Jehoel-Gijsbers & Vrooman, 2007; Papadopoulos & Tsakloglou, 2001; Poggi, 2007; Sen, 2000; Vrooman & Hoff, 2013). Although conceptualisation of the dimensions which are part of social exclusion varies in the literature on social exclusion, two main dimensions can generally be distinguished: i) structural-economic exclusion; and ii) socio-cultural exclusion (Vrooman & Hoff, 2013). Structural-economic exclusion refers to a distributional dimension and includes a material (income and goods) and a non-material (social rights) aspect. Socio-cultural exclusion refers to a relational dimension and includes social integration which involves: i) social relations and networks, and ii) cultural integration which concerns values and norms.

Nowadays, the concept of social exclusion is widely applied in the policy context and is a prominent item on the EU's policy agenda (Papadopoulos & Tsakloglou, 2001). It promotes greater coherence between policy domains including economics, education, employment, environment, social affairs and public health (European Commission, 2009).

Social exclusion and homelessness

Extreme poverty is regarded as the most important individual predictor of homelessness (Burt, 2001). However, compared to social exclusion, poverty has limited explanatory power with regard to the situation of homeless people. Whereas poverty usually relates to material or economic aspects, social exclusion is a broader concept and provides insight into various aspects of the situation of homeless people; e.g. also including social participation and access to social rights. This concept supports the study of homeless people because this group, in particular, experiences an accumulation of disadvantages. A study among formerly homeless people with severe mental illness reported that social integration can best be treated as a multidimensional construct, including housing as well as factors such as social support (Tsai & Rosenheck, 2012). Therefore, the social exclusion construct can be used to examine the situation of homeless people in a holistic sense.

Measuring social exclusion by means of multiple indicators is the most common approach (Morgan et al., 2007). Following Jehoel-Gijsbers et al. (2007), we considered social exclusion as consisting of four dimensions: material deprivation, inadequate access to basic social rights, limited social participation and insufficient cultural integration. The dimension 'material deprivation' includes: deficits that people actually experience, as revealed by a lack of basic goods and services for financial reasons, payment arrears, problematic debts, etc. The dimension 'inadequate access to basic social rights' means that people do not attain adequate health care, sufficient education and a proper living environment. The dimension 'limited social participation' means that people have limited social networks, that they maintain few contacts with others and that their social engagement is low. Finally, the dimension 'insufficient cultural integration' refers to a failure to comply with central norms and values of the individual's community.

These four dimensions, which were developed for the general population, are also relevant for homeless people. For example, concerning the dimension 'material deprivation', homeless people often have debts (Van Laere et al., 2009) and have a lack of satisfactory resources for basic needs (Riley et al., 2007). With regard to the dimension 'access to social rights', a lack of stable housing is inherently connected to homelessness (Tsemberis, Gulcur, & Nakae, 2004), homeless people report substantial unmet care needs (Baggett, O'Connell, Singer, & Rigotti, 2010) and have less health insurance coverage (Kushel, Vittinghoff, & Haas, 2001). With regard to 'limited social participation', having adequate social support is important for the situation of homeless people (Hawkins & Abrams, 2007; Lam & Rosenheck, 1999; Thompson, Pollio, Eyrich, Bradbury, & North, 2004). For example, prospective studies on stable housing showed that having an intimate partner relationship (Palepu, Marshall, Lai, Wood, & Kerr, 2010), having others who are dependent on the homeless person for food/shelter (Orwin, Scott, & Arieira, 2005) and adequate family support (Caton et al., 2005) were positive predictors of attaining stable housing after a period of homelessness. Finally, with regard to 'insufficient cultural integration', homeless people are substantially more involved in the criminal justice system (McGuire & Rosenheck, 2004).

However, the operationalisation of these four dimensions in the index of Jehoel-Gijsbers et al. (2007) is aimed at the general population and includes indicators such as *'I have contact with my neighbors'* (dimension of social participation) and '*I have enough money to heat my home*' (dimension of material deprivation). Because an operationalisation with indicators appropriate for homeless people is not available, we explored social exclusion related to the four dimensions of social exclusion of Jehoel-Gijsbers et al. (2007), but adapted them to the situation of homeless people. The indicators we explored in this study are:

a) material deprivation: debts (Van Laere et al., 2009) and lack of satisfactory resources for basic needs (Riley et al., 2007);
b) inadequate access to social rights: lack of stable housing (Tsemberis et al., 2004), unmet care needs (Baggett et al., 2010) and less health insurance coverage (Kushel et al., 2001);
c) limited social participation: social support (i.e. social support from family/friends, and relatedness to others) (Hawkins & Abrams, 2007; Lam & Rosenheck, 1999; Thompson et al., 2004) and employment (i.e. paid or voluntary work) (Zuvekas & Hill, 2000);
d) insufficient cultural integration: involvement in the criminal justice system (i.e. being arrested, receiving fines) (McGuire & Rosenheck, 2004).

By using these indicators, we selected those indicators empirically shown to be important when studying homeless people, while keeping in mind the four-dimensional concept of social exclusion developed for the general population.

Social exclusion and psychological distress

Among the homeless, (mental) health problems are often present (Fazel et al., 2014; Fazel, Khosla, Doll, & Geddes, 2008; Krausz et al., 2013; Nielsen, Hjorthøj, Erlangsen, & Nordentoft, 2011; Nusselder et al., 2013; Schanzer, Dominguez, Shrout, & Caton, 2007; Toro, Hobden, Wyszacki Durham, Oko-Riebau, & Bokszczanin, 2014). Among the general population, health is strongly related to social exclusion (Coumans & Schmeets, 2015; Evans-Lacko et al., 2014; Popay et al., 2008; Santana, 2002)(Evans-Lacko et al., 2014). E.g. among the general population, those who are socially excluded generally have a significantly poorer mental health than the non-excluded (Jehoel-Gijsbers & Vrooman, 2007; Payne, 2006). Apart from a relationship between mental health and social exclusion in general, mental health is also related to separate indicators of social exclusion. For example, relationships have been demonstrated between debts and mental health (Richardson, Elliott, & Roberts, 2013), between social support and mental health (Kawachi, 2001; Tsai, Desai, & Rosenheck, 2012) and between employment and mental health (Thomas, Benzeval, & Stansfeld, 2005). However, to our knowledge, these relationships have not been investigated among homeless persons, which makes it highly relevant to investigate the relationship between mental health and indicators of social exclusion among homeless people.

We examined mental health using the concept of psychological distress. In both research and clinical settings, psychological distress is a widespread indicator of mental health and mainly combines depression and anxiety symptoms that are indicative of feelings of emotional ill-being (Drapeau et al., 2010). Examining various social exclusion indicators in one model allows us to elucidate which indicators of social exclusion have the strongest association with mental health among homeless people. We also explored whether changes in indicators of social exclusion over time are associated with changes in mental health. Change scores for all the indicators in this study (i.e. debts, resources for basic needs, stable housing, unmet care needs, health insurance, social support from family, social support from friends, relatedness to other, work or voluntary work, arrests and received fines) were included in a model to investigate the associations with changes in mental health among the participants.

Study aim and hypotheses

Using longitudinal data of a cohort study among Dutch homeless people (*n*=378) enabled us to report on the changes in indicators of social exclusion and changes in psychological distress 2.5 years after the homeless people had entered the social relief system. The present study population were homeless people in the four major cities in the Netherlands who reported themselves at a central access point for social relief in 2011 and were accepted for an individual programme plan (see Methods for details).

The following research questions were examined:

1) What are the changes in indicators of social exclusion among Dutch homeless people over a period of 2.5 years after reporting to the social relief system?
2) Are changes in indicators of social exclusion associated with changes in psychological distress over a period of 2.5 years?

Because people who are more socially excluded generally have a poorer mental health than the non-excluded (Jehoel-Gijsbers & Vrooman, 2007; Payne, 2006) and a relationship has been shown between several social exclusion indicators (e.g. debts, social support, employment) and mental health (Kawachi, 2001; Richardson et al., 2013; Thomas et al., 2005; Tsai, Desai, et al., 2012), we hypothesised that improvements on indicators of social exclusion (e.g. having more social support, having less high debts) among homeless people would be associated with improvements in psychological distress (i.e. reduced psychological distress).

7.3 Methods

This study used longitudinal survey data from a cohort study (CODA) on homeless people in the four major cities of the Netherlands (Amsterdam, The Hague, Rotterdam and Utrecht, together called 'the G4'). CODA-G4 is a multi-site cohort study following homeless persons for a period of 2.5 years, starting from the moment they reported themselves at a central access point for social relief in 2011 in one of the included cities and were accepted for an individual programme plan within the CODA-G4 study. The main objectives of CODA-G4 were to determine among homeless individuals accepted for an individual programme plan: their care needs and goals in relation to their background and problems, housing transitions and predictors of stable housing, and changes in their living situation (including health, work/finances, social relations, criminal activities), and quality of life as well as predictors of quality of life. The study did not aim to investigate the impact of policy measures (e.g. the individual programme plan) on the living situation of the participants.

In the Netherlands it is obligatory for every homeless person to report at a central access point to get access to social relief facilities, such as a night shelter. The delivery of care and the supply of living accommodation after accepting an individual programme plan is provided by local care agencies. The municipalities act as policy co-ordinators and case managers monitor the execution of the individual programme plan.

At baseline, all 513 study participants satisfied the criteria set by the four major Dutch cities at that time for starting an individual programme plan, i.e. being at least 18 years of age, having legal residence in the Netherlands, residing in the region of application for at least two years during the last three years, having abandoned the home situation, and being unable to hold one's own in society. Consequently, other subgroups (such as undocumented homeless people) were not provided with an individual programme plan and were therefore excluded from this study. The numbers of participants in each of the four cities was in accordance with the inflow of homeless people at the central access points for social relief in the particular city. Participants consisted of homeless young adults (aged 18-22 years) and homeless adults (aged ≥23 years).

In 2011, over 1800 adults and 1100 young adults reported themselves at a central access point for social relief and were accepted to start an individual programme plan in the four major cities of the Netherlands (Tuynman & Planije 2012); all these persons were potential participants for this study. No data were available on how many potential participants were approached and how many refused to participate. Therefore, in order to obtain information about the representativeness of the study participants, we compared the total group of homeless adults and youth who reported themselves at a central access point for social relief in one of the four included cities in 2011, with our study participants. Adult participants (aged ≥ 23 years; *n*=410) were representative in terms of age and gender. Youth participants (aged 18-22 years; *n*=103) were representative in terms of age but, in our sample, males were overrepresented (60.2% younger males in the cohort vs. 49.2% younger males in the total group).
Data for this study were derived from the baseline interview which took place shortly after the participants reported themselves at a central access point for social relief (T0; January 2011 to December 2011) and from the fourth interview which took place 2.5 years after the baseline interview (T3; July 2013 to June 2014).

Of the initial cohort of 513 participants, 378 participants (73.7%) completed the fourth interview. Although we do not have information about the reasons for attrition of all the 135 non-respondents, we know that some no longer wished to participate in the study and that one participant had died. To investigate selective loss to follow-up, we compared respondents on the final interview (*n*=378) with non-respondents (*n*=135) on demographic variables (age, gender, education, ethnicity) as reported at the first measurement. Compared to respondents on the final interview, non-respondents were on average younger (33.8 vs. 37.2 years), were more often male (83.0% vs. 74.3%) and more often had the lowest level of education (44.4% vs. 30.2%). No selective loss to follow-up was found with respect to ethnicity.

Measures

Demographic characteristics

Demographic characteristics including gender, age, ethnicity and educational level were assessed. Ethnicity was categorised into 'native Dutch' when the participant and both parents were born in the Netherlands and as 'non-native Dutch' when participants were foreign born or when participants were born in the Netherlands but one or both of their parents were foreign born. Education was categorised as 'lowest' when the participant completed primary education at the most, as 'low' when the participant completed pre-vocational education, lower technical education, assistant training or basic labor-oriented education, as 'intermediate' when the participant completed secondary vocational education, senior general secondary education or pre-university education, and categorised as 'high' when the participant completed higher professional education or university education.

Debts

The amount of debts (not including mortgages without overdue payments) was assessed: debts reported by participants showed a very skewed distribution with various outliers (range of the continuous data: 0-500,000 euros). Therefore, we dichotomised debts into '1000 euros or more' (high; > first quartile) and 'less than 1000 euros' (low; < first quartile). This cut-off between high and low debts was data-driven because no normative data for the amount of debts were available.

Resources for basic needs

The Dutch abbreviated version of the Lehman Quality of Life Interview (Wolf et al., 2002) was used to assess the adequacy of finances to cover basic expenditures. Participants were asked "*During the past month, did you generally have enough money to cover (1) food, (2) clothing, (3) housing, (4) traveling around the city for things like shopping, medical appointments, or visiting friends and relatives, and (5) social activities like movies or eating in restaurants?"* (yes or no). The mean number of covered expenditures (range 0-5) was calculated.

Stable housing

Stable housing was defined as at least 90 consecutive days independently housed or living in supportive housing (owned by care organisations) (yes or no).

Unmet care needs

Unmet care needs were assessed using a questionnaire developed by Impuls - Netherlands Center for Social Care Research (Lako et al., 2013). The response categories were based on the format of the Short-Form Quality of Life and Care questionnaire (QoLC) (Wennink & Wijngaarden, 2004). Care needs were considered on eight life domains: finding housing, finances, basic skills, searching for work, physical health, mental health, dental care and safety. For each domain, two questions were asked: ''*Do you want help with …?"* and ''*Do you get help with … ?*''. An unmet care need variable was created for each life domain, which is scored affirmatively when participants indicated they wanted help, but did not receive help. All unmet care needs were summed to a total unmet needs variable, ranging from 0-8. The questionnaire has previously been used among homeless youth (Krabbenborg, Boersma, & Wolf, 2013) and abused women (Jonker, Sijbrandij, & Wolf, 2012).

Health insurance

We asked participants: "*Do you have health insurance*?" (yes or no).

Social support from family and from friends

Social support was assessed by five items derived from scales developed for the Medical Outcome Study (MOS) Social Support (Sherbourne & Stewart, 1991). Participants were asked to indicate how often different kinds of support were available to them through family and friends or other acquaintances, on a 5-point scale ranging from 'none of the time' to 'all of the time'. Two social support measures (ranging from 0-5) were constructed by averaging across items: a family measure, and a friends and acquaintances measure. The MOS Social Support Survey has been used in several studies among homeless people (Nyamathi, Leake, Keenan, & Gelberg, 2000; O'Toole, Gibbon, Hanusa, & Fine, 1999) and showed high convergent and discriminant validity and internal consistency (Sherbourne & Stewart, 1991). The selection of items used in the present study has been successfully used in previous longitudinal research among homeless populations (Krabbenborg et al., 2013; Lako et al., 2013).

Relatedness to others

Experiences of relatedness were measured by one subscale of the Basic Psychological Needs

questionnaire, based on the basic psychological need satisfaction-work version (Ilardi, Leone, And, & Ryan, 2006). Participants were asked to indicate their agreement with 7 items on a 7-point Likert scale, ranging from not true at all (1) to definitely true (7). An example of an item is: '*People in my life care about me*'. The scale has been used in previous studies (Gagné, 2003), including a study among homeless youth (Krabbenborg et al., 2013). Adequate factor structure, internal consistency, reliability (Cronbach's alpha=.92), discriminant validity and predictive validity have been demonstrated (Johnston & Finney, 2010; Vlachopoulos & Michailidou, 2006). The relatedness subscale score ranges from 0-7 and was constructed by averaging across the items of the subscale.

Having a job / volunteer work
The Dutch abbreviated version of the Lehman QoL Interview (Wolf et al., 2002) was used to assess whether participants had a job by asking: *"Do you have a job at this moment (paid job or volunteer work)?"* (yes or no).

Arrests and fines
The Dutch abbreviated version of the Lehman QoL Interview (Wolf et al., 2002) was used to assess whether participants had been arrested by asking: "*Have you been arrested or picked-up for any crimes in the past year?"* (yes or no), and *"Did you get any fines for any violations of the law in the past year?"* (yes or no).

Psychological distress
The Brief Symptom Inventory 18 (BSI-18) was used to measure psychological distress (Derogatis, 2001). The BSI-18 is a short form consisting of 18 items taken from the Symptom Checklist-90-R (SCL-90-R) (Derogatis, 1994), which correlates highly with the SCL-90-R. The BSI-18 assesses three symptom scales (i.e. depression, anxiety and somatisation), which are included in a total score as an indication of general psychological distress. The BSI is a frequently used measure to evaluate psychological distress in studies among homeless populations (Ball, Cobb-Richardson, Connolly, Bujosa, & O'neall, 2005; Kashner et al., 2002; McCaskill, Toro, & Wolfe, 1998; Tsemberis, Kent, & Respress, 2012; Weinreb, Buckner, Williams, & Nicholson, 2006). Respondents rated, from 0 (*never experience symptom*) to 4 (*very often experience symptom*), 18 items like "Nervousness or shakiness inside" and "Feelings of worthlessness". The Dutch translation was used, with (provisional) norm scores for the Dutch population (De Beurs, 2011).
We compared the scores of the participants with the norm scores described in the manual for the Dutch community sample, with separate norm scores for men and women, and for different age categories (18-29 years and 30+ years) (De Beurs, 2011). Because norms for t-scores are not available for the Dutch BSI-18 (De Beurs, 2011), participants were categorised as having a high level of psychological distress if they scored in the upper 20th percentile on a subscale compared with a Dutch community sample. Participants were categorised into two groups: participants with a high level and participants with less than a high level of psychological distress.

Change variables
To create a change variable for psychological distress, participants were classified as having "reduced psychological distress" when they had a high level of distress at baseline and no high level of distress at follow-up, as "increased psychological distress" when they had no high level of distress at baseline, but a high level of distress at follow-up, and as "no change in psychological distress" when they had both at baseline and follow-up either a high or no high level of psychological distress. For all other variables, a change variable was created by subtracting the score at baseline from the score at follow-up.

Statistical analysis
Descriptive analyses were performed to describe demographic characteristics of the participants.
To analyse changes in indicators of social exclusion between the baseline measurement and the 2.5-year follow-up, a McNemar test was used for 2 × 2 categorical data. A paired t-test was used to analyse changes between baseline measurement and the 2.5-year follow-up for the continuous data.
We used a multinomial logistic regression to analyse the association between the change in social exclusion indicators between baseline and follow-up and the change in psychological distress between baseline and follow-up. This type of regression is similar to binary logistic regression, but allows the dependent variable to have more than two categories. In this study the outcome variable 'change in psychological distress' consisted of three categories: 'decreased psychological distress', 'increased psychological distress' and 'no change in psychological distress'. The reference (or excluded) category for this analysis was 'no change in psychological distress'. Participants with missing data were excluded from the analyses.
Results are reported as odds ratio (OR), standard error (SE) of the OR, and the *p*-values. The Nagelkerke R^2 is reported to indicate the proportion of variance of the change in psychological distress that was explained by all the indicators in the model. We used partial Nagelkerke's R^2 to quantify the partial contributions of each indicator to the change in psychological distress. Multicollinearity (i.e. when two or more variables are very closely linearly related) among the predictors was examined by a) the variance inflation factor (VIF) (indicated by a VIF value >10) and by b) the tolerance value (indicated by a value <0.1); the Nagelkerke R^2 is reported. All statistical analyses were conducted with IBM SPSS Statistics version 23.

7.4 Results

Descriptive statistics
Table 1 presents the demographic characteristics of the participants at baseline. The mean age of the participants was 37.2 (range 18-71) years. Almost three quarters were male (74.3%), and the majority had a non-native Dutch background (64.1%); 30% fell in the lowest category of education (completed primary education at the most), and 45.2% were had a low level of education.

Table 1 Demographic characteristics of the participants

Baseline characteristic	*n*	*% / Mean (SD)*
Age in years	378	37.2 (12.9) (range 18-71)
Gender %	378	
Male		74.3
Female		25.7
Education %	374	
Lowest		30.2
Low		45.2
Intermediate		15.8
High		8.8
Ethnicity %	368	
Native Dutch		35.9
Non-native Dutch		64.1

Changes in social exclusion indicators and changes in psychological distress

Table 2 shows the changes in the social exclusion indicators and in psychological distress during the period between entering the social relief system (T0) and 2.5 years later (T3). Significant improvements took place on most of the social exclusion indicators in the 2.5 years after admission to the social relief system. The percentage of stably housed participants rose sharply by 66.7%. Also, most of the 'social rights' indicators improved significantly, as did the indicators conceptualising social participation and cultural integration. The only indicator that did not improve significantly was 'high debts': i.e. the percentage of participants with high debts (≥ 1,000 euros) remained at around 71%.

There was a significant decrease in the number of participants with a high level of psychological distress: i.e. at baseline 39.5% of the participants had a high level of psychological distress compared with 27.0% 2.5 years later.

Table 2 Changes in social exclusion indicators and psychological distress in the period between entering the social relief system (T0) and 2.5 years later (T3) among the initially homeless participants

Social exclusion dimensions	**Social exclusion indicators**	**Range of scores / coding**	**n**	**T0 (% or M)**	**T3 (% or M)**	**Change T3 – T0 (% or M)**
Material deprivation	High debts (≥ 1,000 euros)	yes=1; no=0	280	71.4%	70.7%	-0.7%
	Satisfied resources for basic needs	0-5	376	2.11	2.87	0.76***
Access to social rights	Stable housing	yes=1; no=0	378	0.0%	66.7%	66.7% n.a.
	Number of unmet care needs	0-8	376	2.19	1.26	-0.93***
	Health insurance	yes=1; no=0	367	91.3%	96.2%	4.9%**
Social participation	Social support from family[1]	0-5	366	2.82	3.62	0.80***
	Social support from friends[2]	0-5	378	3.11	3.60	0.48***
	Relatedness to others[3]	0-7	369	4.97	5.19	0.22***
	Work or voluntary work	yes=1; no=0	378	30.4%	38.1%	7.7%*
Cultural integration	Arrested in the past year	yes=1; no=0	371	31.3%	8.6%	-22.7%***
	Received fines in the past year	yes=1; no=0	372	47.8%	29.0%	-18.8%***
Psychological distress						
Psychological distress	High level of psychological distress	yes=1; no=0	367	39.5%	27.0%	-12.5%***

* p<.05; ** p<.01; *** p <.001
n.a.=significance testing not possible due to small cell counts
[1] Higher scores indicating greater social support from family
[2] Higher scores indicating greater social support from friends
[3] Higher scores indicating more feelings of relatedness

Associations between changes in social exclusion indicators and changes in psychological distress

Of the participants (*n*=367), 19.3% (*n*=71) showed a substantial decrease in psychological distress: i.e. they had a high level of psychological distress at baseline but no high level of psychological distress was present at 2.5-year follow-up. An increase in psychological distress was seen in a relatively small group of participants (6.8%, *n*=25), while for most participants their distress level had not changed (73.8%, *n*=271).

Multinomial logistic regression analysis revealed reduced psychological distress more frequently in participants reporting less unmet care needs at 2.5-year follow-up (OR=0.75), less health insurance coverage (OR=0.26), more social support from family (OR=1.58) and more feelings of relatedness (OR=1.82) (Table 3).

Increased psychological distress was found more frequently in participants reporting more unmet care needs (OR=1.92), more health insurance coverage (OR=7.86) and less feelings of relatedness (OR=0.28) (Table 3).
These variables together accounted for 37.1% of the variance in the change in psychological distress between baseline and 2.5 year follow-up. The four variables that contributed most to this rate (partial Nagelkerke's R^2) were: change in unmet care needs (12.4%), change in relatedness to others (8.6%), change in social support from family (4.0%), and change in arrests in the past year (3.5%).

Because 98 participants could not provide data on debts on either the first measurement, the follow-up measurement or on both measurements (they did not know the extent of their debts), they were excluded in the model. Additional analysis revealed that excluding these participants had no significant impact on the results.

Table 3 Associations between changes in social exclusion indicators and changes in psychological distress among the initially homeless participants (*n*=246)

	Reduced psychological distress (*n*=49)	Increased psychological distress (*n*=22)
Changes in social exclusion indicators[1]	OR[2,3] (95% CI)	OR[2,3] (95% CI)
Material deprivation		
Change in high debts	0.844 (0.40-1.78)	1.02 (0.31-3.34)
Change in satisfied resources for basic needs	1.06 (0.87-1.30)	1.04 (0.78-1.39)
Access to social rights		
Change in stable housing	1.02 (0.46-2.26)	1.22 (0.37-3.98)
Change in unmet care needs	0.75 (0.59-0.95) *	1.92 (1.25-2.95) **
Change in health insurance	0.26 (0.071-0.95) *	7.86 (1.29-47.9) *
Social participation		
Change in social support from family	1.58 (1.18-2.12) **	0.81 (0.53-1.24)
Change in social support from friends	0.99 (0.73-1.35)	1.29 (0.81-2.04)
Change in relatedness to others	1.82 (1.11-2.98) *	0.28 (0.12-0.68) **
Change in work or voluntary work	1.37 (0.72-2.61)	0.52 (0.18-1.47)
Cultural integration		
Change in arrests in the past year	0.75 (0.34-1.62)	3.26 (0.97-11.0)
Change in received fines in the past year	1.24 (0.70-2.21)	1.67 (0.64-4.38)

* p<.05; ** p<.01
[1] change scores of the indicators are used in this model (score at baseline subtracted from the score at follow-up)
[2] adjusted for all other variables included in the multivariate model and for age and gender
[3] 'no change in psychological distress' (n=175) was the reference category
Nagelkerke R^2=0.371; All the VIF values for the predictors were <10 and all the tolerance values were >0.1, indicating that there was no multicollinearity in the model.

7.5 Discussion

This study examined changes in indicators of social exclusion in a cohort of Dutch homeless people over a period of 2.5 years using a four-dimensional concept of social exclusion (Jehoel-Gijsbers et al. 2007). This study also addressed associations of changes in indicators of social exclusion with changes in psychological distress.

Changes in indicators of social exclusion over 2.5 years

For all of the four dimensions of social exclusion, i.e. 'material deprivation', 'access to social rights', 'social participation' and 'cultural integration', at least one indicator improved significantly between baseline and 2.5-year follow-up. With regard to the dimension 'material deprivation', participants reported more satisfied resources for basic needs (e.g. having enough money to cover food, clothing, housing, etc.). However, financial debts did not significantly improve and the majority of the participants still had high debts at follow-up. With regard to 'access to social rights', the results showed a remarkable improvement in the indicator 'stable housing': when entering the social relief system none of the participants were stably housed whereas 2.5 years later 66.7% were stably housed. Also, less unmet care needs and more health insurance coverage were reported. With regard to 'social participation', there was more social support from family and friends, more relatedness to others, and more participants had a job or voluntary work. Finally, with regard to 'cultural integration', less participants had been arrested or received fines.

Associations between changes in indicators of social exclusion and changes in psychological distress

This study identified changes in social exclusion measured by means of various indicators which were associated with changes in psychological distress: participants reporting less unmet care needs, less health insurance coverage, more social support from family and more feelings of relatedness reported reduced psychological distress more frequently. Conversely, an increase in unmet care needs, relatedness to others and more health insurance coverage were related to an increase in psychological distress. The predictor variables together accounted for 37.1% of the variance in the change in psychological distress between baseline and 2.5 year follow-up.

The association between social exclusion indicators and psychological distress is in line with results from the general population, where it was found that those who are socially excluded generally have a significantly poorer mental health than the non-excluded (Jehoel-Gijsbers & Vrooman, 2007). In addition, a study among clients of mental health centres found that those who had more severe mental health symptoms were less socially integrated, i.e., they reported less relationship contacts and less social support (Tsai, Desai, et al., 2012). Our study adds information on this relationship, because this has not previously been investigated specifically for homeless people in a longitudinal way. However, we cannot make causal relationships based on our data. The relationship between social exclusion and mental health is complex: i.e. many of the elements of social exclusion (e.g. low income, lack of social networks, not having a job) could (in different circumstances) be both causal factors and consequences of mental health problems (Sayce, 2001).

It is noteworthy that the indicator 'stable housing' was not associated with reduced psychological distress. This suggests that housing was not independently related to the mental health of homeless people. A previous study showed that housing homeless people does not automatically lead to social integration (Tsai, Mares, et al., 2012); this latter study among homeless adults after entering a supported housing programme, found that although the improvement in housing was substantial, changes in other domains of social integration were minimal. The authors concluded that clients may benefit from interventions that focus on their social integration only after housing is obtained. Our results indicate that such an intervention could also be beneficial for improving the mental health of homeless people after they are housed. The beneficial effects of social support for the mental health of persons with mental illness have previously been demonstrated (Albert, Becker, Mccrone, & Thornicroft, 1998; Hawkins & Abrams, 2007).

The finding that less unmet care needs were associated with reduced psychological distress may have various explanations: for example, the participants may have had less unmet care needs because of the improvements that took place in their living situation, or the unmet care needs may have been addressed within the 2.5-year study period, resulting in an improvement in mental health.
An unexpected result was that the coverage of health insurance was negatively associated with reduced psychological distress. However, although this result was significant, the practical relevance of this finding is unclear. In the Netherlands, it is mandatory for all residents to take out health insurance, and every health insurer in the Netherlands has a legal obligation to accept everyone who applies for insurance. Uninsured persons are identified by means of database comparisons and, if they refuse to comply to take out insurance, the Health Insurance Board will take out insurance on behalf of anyone who is still uninsured (The Ministry of Health Welfare and Sport, 2011). Therefore, the prevalence of people who are uninsured in the Netherlands is very low; this also applies to homeless people who legally reside in the Netherlands (e.g. in our cohort, ≥ 90% had health insurance). However, it is possible that health insurance coverage was the most prevalent among individuals with the most serious (mental) health problems, because they may be in more contact with care providers who take out insurance for their clients; this might be an explanation for this particular result.

No improvements in 'high debts'
Despite the fact that the policy measures for homeless people were also aimed to improve income and target debts, having high debts was the only indicator of social exclusion that did not improve. In the Netherlands, there is an arrangement for debtors who are not able to pay their creditors. In this process the debtor becomes debt free after a 3-year period whereby the creditors receive a portion of the money owed to them. A possible explanation for the finding that high debts among the participants did not decline, is that it may take more time for an intervention to have its effect on debts. A longer follow-up period might show a decline in debts in the subgroup with this arrangement for debtors. High debts are also associated with poorer health outcomes (Clayton, Liñares-Zegarra, & Wilson, 2015). However, we found no association between a change in debt and a decrease in psychological distress. The absence of this association might be explained by the small number of persons who reported an improvement in debts between baseline and follow-up. Additional analyses revealed a significant association between high debts and a high level of psychological distress at baseline as well as at follow-up. Thus, if reductions in high debts take place in future among these participants, this indicator of social exclusion might also be significantly associated with reduced psychological distress.

Newly homeless people
Our participants consisted mainly of 'newly homeless people'; i.e. those who reported to the social relief system in 2011. More than half of them had a total duration of homelessness in their lives of ≤ 1 year (Van Straaten et al., 2012). Investigating a cohort of mainly 'newly homeless people' in terms of social exclusion is very relevant. First-time homeless people often return to independent housing, but remain a vulnerable group after exiting the shelter and returning to the poor communities from which they often emerged (Caton et al., 2005). This relatively short duration of homelessness seems to fit a trend in the Netherlands towards a shorter mean duration of homelessness among homeless people. To illustrate, from around the turn of the century until about 10 years ago (2001-2006), studies among Dutch homeless people showed that the mean duration of homelessness was around 6 years (De Bruin, Meijerman, & Verbraeck, 2003; Hulsbosch, Nicholas, & Wolf, 2005; Reinking, Wolf, & Kroon, 2001; Vocks, Meertens, & Wolf, 2007). Being homeless can then gradually develop into a way of life: they socialise with other homeless people, they are seen as homeless by the environment, and may start viewing themselves as such (Van Doorn, 2002). More recent studies report substantially shorter mean durations of homelessness of around 3 years (Tielen, 2010) to as short a duration as a few months (Van Everdingen, 2015). Although these variations in the duration of homelessness might be influenced by the type of facility in which a study is conducted, this trend suggests that the profile of the homeless population in the Netherlands has changed substantially over recent years. This might be due (in part) to the influence of local and national policy by which the 'traditional' homeless populations, including the chronically homeless, have largely been successfully taken off the streets in recent decades (Barendregt & van de Mheen, 2009; Tuynman & Planije, 2014). Also, considerable efforts have been made to improve the situation of homeless people during the study period (Dutch Government and four major cities, 2011). These factors might account for the improvements in the social exclusion indicators among the participants in the present study. However, despite these positive results, between 2009 and 2012 the estimated size of the homeless population in the Netherlands increased, which was largely due to the financial crisis (Coumans, Cruyff,

Van der Heijden, Wolf, & Schmeets, 2015). It is estimated that in 2015 a total of 31,000 people were homeless in the Netherlands (Statistics Netherlands, 2016).

Strengths and limitations

The present study has a number of strengths. Longitudinal data were available for a relatively large cohort of homeless people with a very high response rate at follow-up (73.7%). Our investigation of social exclusion indicators among homeless people provided broad insight into their disadvantaged situation. Also, using longitudinal data and investigating indicators of social exclusion placed the situation of homeless people in a broader perspective. Finally, as homeless people are often the least likely to be included in common measures of social exclusion (Popay et al., 2008), we offer insight into indicators of social exclusion of this very vulnerable group.

Some limitations also need to be addressed. One of the main challenges when studying social exclusion among populations is the selection of appropriate indicators for social exclusion (Coumans & Schmeets, 2015). We selected indicators proven to be relevant when studying homeless people. Although our conceptualisation of social exclusion was more appropriate for homeless people than the commonly used indicators for the general population, we may have used too narrowly defined indicators of social exclusion. Moreover, we did not use the same questionnaire as used among the general population in the study of Jehoel-Gijsbers et al. (2007), and did not ask the participants directly whether or not they felt socially excluded, which might have provided additional information apart from the more conceptual measures. The indicators we selected for this study were related to the four-dimensional model of social exclusion (Jehoel-Gijsbers & Vrooman, 2007). We explored whether these indicators represented the four-dimensional model of social exclusion developed for the general population (Jehoel-Gijsbers & Vrooman, 2007) by means of a categorical principal components analysis. This analysis showed that some of the selected indicators matched the social exclusion dimensions, but the dimensions were not fully covered. Future studies are required on how best to measure social exclusion among homeless people and which indicators should be included.

Another issue is the higher loss to follow-up of participants who were younger, male, and had the lowest level of education. However, it is unknown whether and in which direction this selective loss to follow-up may have biased our findings as we lack information on the change variables of these non-respondents which we used in the analyses.

An issue related to the construction of the variables is the dichotomisation of debts and psychological distress. Debts were dichotomised because they showed skewed distributions and multiple outliers and this dichotomisation could decrease statistical power. However, an advantage of dichotomisation is that it encourages a 'risk factor' approach, which helps in targeting intervention efforts (Farrington & Loeber, 2000). The dichotomisation of psychological distress was based on age and gender-adjusted norm scores of psychological distress of a Dutch community sample, which helped our understanding of the results and the magnitude of psychological distress in our participants. To check the possible impact of this dichotomisation, we additionally analysed the data by means of a linear regression with psychological distress as a continuous variable. This analysis revealed the same significant variables as the analyses with psychological distress as a categorical variable.

A final methodological concern is related to the subgroup of the total population of homeless people in the Netherlands that was studied, i.e. only those who reported themselves at a central access point for social relief in 2011 in one of the four major Dutch cities and were accepted for an individual programme plan. As stated before, it is obligatory for every homeless person to report at a central access point for social relief in order to gain access to social relief facilities (e.g. a night shelter). Therefore, the vast majority of the homeless population is covered when using this selection criterion. Subgroups of homeless people not included in this study were undocumented homeless people and homeless people who do not make use of social relief facilities. These latter groups may show different patterns regarding social exclusion indicators and psychological distress.

Several questions concerning the concept of social exclusion and the application of the concept for homeless people remain. For example, there is no consensus on which dimensions are relevant, which (if any) are the most important, and whether being socially excluded is an objective state or a subjectively felt experience (Morgan et al., 2007).

Conclusion

Whereas homeless people are rarely included in studies on social exclusion (Popay et al., 2008), this study focused on homeless people using the social exclusion concept by means of social exclusion indicators that were more appropriate for this subgroup. This study sheds light on the concept of social exclusion in relation to homelessness.

7.6 References

Albert, M., Becker, T., Mccrone, P., & Thornicroft, G. (1998). Social Networks and Mental Health Service Utilisation - a Literature Review. *International Journal of Social Psychiatry*, 44(4), 248–266. doi:10.1177/002076409804400402

Baggett, T. P., O'Connell, J. J., Singer, D. E., & Rigotti, N. a. (2010). The unmet health care needs of homeless adults: a national study. *American Journal of Public Health*, 100(7), 1326–33. doi:10.2105/AJPH.2009.180109

Ball, S. A., Cobb-Richardson, P., Connolly, A. J., Bujosa, C. T., & O'neall, T. W. (2005). Substance abuse and personality disorders in homeless drop-in center clients: symptom severity and psychotherapy retention in a randomized clinical trial. *Comprehensive Psychiatry*, 46(5), 371–9. doi:10.1016/j.comppsych.2004.11.003

Barendregt, C., & van de Mheen, D. (2009). Then there was silence on the streets. Developments in the street scene of Rotterdam in the last decade. *Drugs: Education, Prevention, and Policy*, 16(6), 497–511. doi:10.3109/09687630903152895

Burt, M. R. (2001). *What Will It Take to End Homelessness?* Washinton, D.C.

Caton, C. L. M., Dominguez, B., Schanzer, B., Hasin, D. S., Shrout, P. E., Felix, A., … Hsu, E. (2005). Risk factors for long-term homelessness: findings from a longitudinal study of first-time homeless single adults. *American Journal of Public Health*, 95(10), 1753–9. doi:10.2105/AJPH.2005.063321

Clayton, M., Liñares-Zegarra, J., & Wilson, J. O. S. (2015). Does debt affect health? Cross country evidence on the debt-health nexus. *Social Science & Medicine*, 130, 51–58. doi:10.1016/j.socscimed.2015.02.002

Coumans, A. M., Cruyff, M., Van der Heijden, P. G. M., Wolf, J., & Schmeets, H. (2015). Estimating Homelessness in the Netherlands Using a Capture-Recapture Approach. *Social Indicators Research*. doi:10.1007/s11205-015-1171-7

Coumans, M., & Schmeets, H. (2015). The Socially Excluded in the Netherlands: The Development of an Overall Index. *Social Indicators Research*, 122(3), 779–805. doi:10.1007/s11205-014-0707-6

De Beurs, E. (2011). *Brief Symptom Inventory 18 -BSI 18- Handleiding herziene editie*. Leiden: PITS.

De Bruin, D., Meijerman, C., & Verbraeck, H. (2003). *Zwerven in de 21ste eeuw: een exploratief onderzoek naar geestelijke gezondheidsproblematiek en overlast van dak- en thuislozen in Nederland*. Utrecht: Centrum voor Verslavingsonderzoek.

Derogatis, L. R. (1994). *Symptom Checklist-90-R (SCL-90-R): Administration, Scoring, and Procedures Manual. 3rd ed*. Minneapolis: Minn: National Computer Systems.

Derogatis, L. R. (2001). *Brief Symptom Inventory (BSI)-18. Administration, scoring and procedures manual.* Minneapolis: NCS Pearson, Inc.

Drapeau, A., Beaulieu-Prévost, D., Marchand, A., Boyer, R., Préville, M., & Kairouz, S. (2010). A life-course and time perspective on the construct validity of psychological distress in women and men. Measurement invariance of the K6 across gender. *BMC Medical Research Methodology*, 10, 68. doi:10.1186/1471-2288-10-68

Dutch Government and four major cities. (2011). *Strategy Plan for Social Relief, Phase 2.*

European Commission. (2009). *Joint Report on Social Protection and Social Inclusion. Communities.* Luxembourg: Office for Official Publications of the European Communities.

Evans-Lacko, S., Courtin, E., Fiorillo, A., Knapp, M., Luciano, M., Park, A. L., … Thornicroft, G. (2014). The state of the art in European research on reducing social exclusion and stigma related to mental health: A systematic mapping of the literature. *European Psychiatry*, 29(6), 381–389. doi:10.1016/j.eurpsy.2014.02.007

Farrington, D. P., & Loeber, R. (2000). Some benefits of dichotomization in psychiatric and criminological research. *Criminal Behaviour and Mental Health*, 10(2), 100–122. doi:10.1002/cbm.349

Fazel, S., Geddes, J. R., & Kushel, M. (2014). The health of homeless people in high-income countries: descriptive epidemiology, health consequences, and clinical and policy recommendations. *The Lancet*, 384(9953), 1529–1540. doi:10.1016/S0140-6736(14)61132-6

Fazel, S., Khosla, V., Doll, H., & Geddes, J. (2008). The prevalence of mental disorders among the homeless in western countries: systematic review and meta-regression analysis. *PLoS Medicine*, 5(12), e225. doi:10.1371/journal.pmed.0050225

Gagné, M. (2003). The Role of Autonomy Support and Autonomy Orientation in Prosocial Behavior Engagement. *Motivation and Emotion*, 27(3), 199–223.

Hawkins, R. L., & Abrams, C. (2007). Disappearing acts: The social networks of formerly homeless individuals with co-occurring disorders. *Social Science and Medicine*, 65(10), 2031–2042. doi:10.1016/j.socscimed.2007.06.019

Hulsbosch, L., Nicholas, S., & Wolf, J. (2005). *Dakloos in Leiden. Onderzoek naar omvang en kenmerken van de daklozenpopulatie*. Utrecht.

Ilardi, B. C., Leone, D., And, T. K., & Ryan, R. M. (2006). Employee and Supervisor Ratings of Motivation: Main Effects and Discrepancies Associated with Job Satisfaction and Adjustment in a Factory Setting. *Journal of Applied Social Psychology*, 23(21), 1789–1805.

Jehoel-Gijsbers, G., Smits, W., Boelhouwer, J., & Bierings, H. (2009). *Sociale uitsluiting: een meetinstrument [Social exclusion: A Measuring instrument]*. The Hague.

Jehoel-Gijsbers, G., & Vrooman, C. (2007). Explaining social exclusion. A theoretical model tested in the Netherlands. *International Journal of Sociology and Social Policy*, 21(4/5/6). doi:10.1108/01443330110789411

Johnston, M. M., & Finney, S. J. (2010). Measuring basic needs satisfaction: Evaluating previous research and conducting new psychometric evaluations of the Basic Needs Satisfaction in General Scale. *Contemporary Educational Psychology*, 35(4), 280–296.

Jonker, I. E., Sijbrandij, M., & Wolf, J. R. L. M. (2012). Toward Needs Profiles of Shelter-Based Abused Women: Latent Class Approach. *Psychology of Women Quarterly*, 36(1), 38–53. doi:10.1177/0361684311413553

Kashner, T. M., Rosenheck, R., Campinell, A. B., Surís, A., Crandall, R., Garfield, N. J., … Wicker, A. (2002). Impact of Work Therapy on Health Status Among Homeless, Substance-Dependent Veterans. A Randomized Controlled Trial. *Archives of General Psychiatry*, 59(10), 938. doi:10.1001/archpsyc.59.10.938

Kawachi, I. (2001). Social Ties and Mental Health. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, 78(3), 458–467. doi:10.1093/jurban/78.3.458

Krabbenborg, M. A. M., Boersma, S. N., & Wolf, J. R. L. M. (2013). A strengths based method for homeless youth: effectiveness and fidelity of Houvast. *BMC Public Health*, 13, 359. doi:10.1186/1471-2458-13-359

Krausz, R. M., Clarkson, A. F., Strehlau, V., Torchalla, I., Li, K., & Schuetz, C. G. (2013). Mental disorder, service use, and barriers to care among 500 homeless people in 3 different urban settings. *Social Psychiatry and Psychiatric Epidemiology*, 48(8), 1235–1243. doi:10.1007/s00127-012-0649-8

Kushel, M. B., Vittinghoff, E., & Haas, J. S. (2001). Factors associated with the health care utilization of homeless persons. *JAMA : The Journal of the American Medical Association*, 285(2), 200–206. doi:10.1001/jama.285.2.200

Lako, D. A., de Vet, R., Beijersbergen, M. D., Herman, D. B., van Hemert, A. M., & Wolf, J. R. (2013). The effectiveness of critical time intervention for abused women and homeless people leaving Dutch shelters: study protocol of two randomised controlled trials. *BMC Public Health*, 13(1), 555. doi:10.1186/1471-2458-13-555

Lam, J. a, & Rosenheck, R. (1999). Social support and service use among homeless persons with serious mental illness. *The International Journal of Social Psychiatry*, 45(1), 13–28.

McCaskill, P. A., Toro, P. A., & Wolfe, S. M. (1998). Homeless and matched housed adolescents: a comparative study of psychopathology. *Journal of Clinical Child Psychology*, 27(3), 306–19. doi:10.1207/s15374424jccp2703_7

McGuire, J. F., & Rosenheck, R. a. (2004). Criminal history as a prognostic indicator in the treatment of homeless people with severe mental illness. *Psychiatric Services (Washington, D.C.)*, 55(1), 42–48.

Morgan, C., Burns, T., Fitzpatrick, R., Pinfold, V., & Priebe, S. (2007). Social exclusion and mental health: conceptual and methodological review. *The British Journal of Psychiatry: The Journal of Mental Science*, 191(6), 477–83. doi:10.1192/bjp.bp.106.034942

Nielsen, S. F., Hjorthøj, C. R., Erlangsen, A., & Nordentoft, M. (2011). Psychiatric disorders and mortality among people in homeless shelters in Denmark: A nationwide register-based cohort study. *The Lancet*, 377(9784), 2205–2214. doi:10.1016/S0140-6736(11)60747-2

Nusselder, W. J., Slockers, M. T., Krol, L., Slockers, C. T., Looman, C. W. N., & van Beeck, E. F. (2013). Mortality and Life Expectancy in Homeless Men and Women in Rotterdam: 2001-2010. *PLoS ONE*, 8(10), 1–7. doi:10.1371/journal.pone.0073979

Nyamathi, A., Leake, B., Keenan, C., & Gelberg, L. (2000). Type of social support among homeless women: Its impact on psychosocial resources, health and health behaviors, and use of health services. *Nursing Research*, 49(6), 318–326.

O'Toole, T. P., Gibbon, J. L., Hanusa, B. H., & Fine, M. J. (1999). Utilization of Health Care Services among Subgroups of Urban Homeless and Housed Poor. *Journal of Health Politics, Policy and Law*, 24(1), 91–114.

Orwin, R. G., Scott, C. K., & Arieira, C. (2005). Transitions through homelessness and factors that predict them. *Journal of Substance Abuse Treatment*, 28(2), S23–S39. doi:10.1016/j.jsat.2004.10.011

Palepu, A., Marshall, B. D. L., Lai, C., Wood, E., & Kerr, T. (2010). Addiction treatment and stable housing among a cohort of injection drug users. *PloS One*, 5(7), e11697. doi:10.1371/journal.pone.0011697

Papadopoulos, F., & Tsakloglou, P. (2001). *Indicators of Social Exclusion in EUROMOD, EUROMOD Working Paper EM8/01*. Athens.

Payne, S. (2006). *Mental health, poverty and social exclusion. In Poverty and Social Exclusion in Britain (eds C. Pantazis, D. Gordon & R. Levitas)*.

Poggi, A. (2007). Does persistence of social exclusion exist in Spain? *Journal of Economic Inequality*, 5(1), 53–72. doi:10.1007/s10888-006-9025-9

Popay, J., Escorel, S., Hernández, M., Johnston, H., Mathieson, J., & Rispel, L. (2008). *Understanding and tackling social exclusion. Final report to the WHO Commission on Social Determinants of Health from the Social Exclusion Knowledge Network*. Geneva. doi:10.1177/1744987110370529

Reinking, D. P., Wolf, J. R. L. M., & Kroon, H. (2001). Hoge prevalentie van psychische stoornissen en verslavingsproblemen bij daklozen in de stad Utrecht. *Ned Tijdschr Geneeskd*, 145(1161), 1166.

Richardson, T., Elliott, P., & Roberts, R. (2013). The relationship between personal unsecured debt and mental and physical health: A systematic review and meta-analysis. *Clinical Psychology Review*, 33(8), 1148–1162. doi:10.1016/j.cpr.2013.08.009

Riley, E. D., Weiser, S. D., Sorensen, J. L., Dilworth, S., Cohen, J., & Neilands, T. B. (2007). Housing patterns and correlates of homelessness differ by gender among individuals using San Francisco free food programs. *Journal of Urban Health*, 84(3), 415–422. doi:10.1007/s11524-006-9153-3

Santana, P. (2002). Poverty, social exclusion and health in Portugal. *Social Science and Medicine*, 55(1), 33–45. doi:10.1016/S0277-9536(01)00218-0

Sayce, L. (2001). Social inclusion and mental health. *Psychiatric Bulletin*. doi:10.1192/pb.25.4.121

Schanzer, B., Dominguez, B., Shrout, P. E., & Caton, C. L. M. (2007). Homelessness, Health Status, and Health Care Use. *American Journal of Public Health*, 97(3), 464–469. doi:10.2105/AJPH.2005.076190

Sen, A. (2000). *Social Exclusion: Concept, Application and Scrutiny*. *Social Development*. Manila: Asian Development Bank. doi:10.1.1.100.1010

Sherbourne, C. D., & Stewart, A. L. (1991). The Mos Social Support Survey, 32(6), 705–714.

Statistics Netherlands. (2016). Aantal daklozen in zes jaar met driekwart toegenomen. Retrieved from www.cbs.nl/nl-NL/menu/themas/bevolking/publicaties/artikelen/archief/2016/aantal-daklozen-in-zes-jaar-met-driekwar-toegenomen.htm

The Ministry of Health, Welfare and Sport. (2011). *Health Insurance in the Netherlands*. The Hague.

Thomas, C., Benzeval, M., & Stansfeld, S. a. (2005). Employment transitions and mental health: an analysis from the British household panel survey. *Journal of Epidemiology and Community Health*, 59(3), 243–249. doi:10.1136/jech.2004.019778

Thompson, S. J., Pollio, D. E., Eyrich, K., Bradbury, E., & North, C. S. (2004). Successfully exiting homelessness: experiences of formerly homeless mentally ill individuals. *Evaluation and Program Planning*, 27(4), 423–431. doi:10.1016/j.evalprogplan.2004.07.005

Tielen, H. (2010). *Dakloos in Leiden. Telling en omvangschatting van de volwassen populatie*. Leiden.

Toro, P. A., Hobden, K. L., Wyszacki Durham, K., Oko-Riebau, M., & Bokszczanin, A. (2014). Comparing the characteristics of homeless adults in Poland and the United States. *American Journal of Community Psychology*, 53(1-2), 134–45. doi:10.1007/s10464-014-9632-8

Tsai, J., Desai, R. A., & Rosenheck, R. A. (2012). Social integration of people with severe mental illness: Relationships between symptom severity, professional assistance, and natural support. *Journal of Behavioral Health Services and Research*, 39(2), 144–157. doi:10.1007/s11414-011-9266-7

Tsai, J., Mares, A. S., & Rosenheck, R. A. (2012). Does Housing Chronically Homeless Adults Lead to Social Integration? *Psychiatric Services*, 63(5), 427. doi:10.1176/appi.ps.201100047

Tsai, J., & Rosenheck, R. A. (2012). Conceptualizing social integration among formerly homeless adults with severe mental illness. *Journal of Community Psychology*, 40(4), 456–467. doi:10.1002/jcop

Tsemberis, S., Gulcur, L., & Nakae, M. (2004). Housing First, consumer choice, and harm reduction for homeless individuals with a dual diagnosis. *American Journal of Public Health*, 94(4), 651–6. Retrieved from www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1448313&tool=pmcentrez&rendertype=abstract

Tsemberis, S., Kent, D., & Respress, C. (2012). Housing stability and recovery among chronically homeless persons with co-occuring disorders in Washington, DC. *American Journal of Public Health*, 102(1), 13–6. doi:10.2105/AJPH.2011.300320

Tuynman, M., & Planije, M. (2012). *Monitor Plan van Aanpak Maatschappelijke Opvang. Rapportage 2011: Amsterdam, Rotterdam, Den Haag en Utrecht*.

Tuynman, M., & Planije, M. (2014). *"Het kán dus!" Een doorbraak in het Nederlandse dakloosheidsbeleid. Evaluatie Plan van Aanpak maatschappelijke opvang in de vier grote steden, 2006-2014*. Utrecht.

Van Doorn, L. (2002). *Een tijd op straat: een volgstudie naar (ex-)daklozen in Utrecht (1993-2000)*. Utrecht: NIZW.

Van Everdingen, C. (2015). *Verwarde mensen op straat*. Sittard.

Van Laere, I. R., de Wit, M. a, & Klazinga, N. S. (2009). Pathways into homelessness: recently homeless adults problems and service use before and after becoming homeless in Amsterdam. *BMC Public Health*, 9, 3. doi:10.1186/1471-2458-9-3

Van Straaten, B., Van der Laan, J., Schrijvers, C., Boersma, S., Maas, M., Wolf, J., & Van de Mheen, D. (2012). *Profiel van daklozen in de vier grote steden*. Rotterdam / Nijmegen. Retrieved from www.codag4.nl/publicaties

Vlachopoulos, S. P., & Michailidou, S. (2006). Development and Initial Validation of a Measure of Autonomy, Competence, and Relatedness in Exercise: The Basic Psychological Needs in Exercise Scale. *Measurement in Physical Education and Exercise Science*, 10(3), 179–201.

Vocks, J., Meertens, V., & Wolf, J. (2007). *Dakloos in Zwolle. Onderzoek naar omvang en profiel van de daklozenpopulatie*. Nijmegen.

Vrooman, J. C., & Hoff, S. J. M. (2013). The Disadvantaged Among the Dutch: A Survey Approach to the Multidimensional Measurement of Social Exclusion. *Social Indicators Research*, 113(3), 1261–1287. doi:10.1007/s11205-012-0138-1

Weinreb, L. F., Buckner, J. C., Williams, V., & Nicholson, J. (2006). A comparison of the health and mental health status of homeless mothers in Worcester, Mass: 1993 and 2003. *American Journal of Public Health*, 96(8), 1444–8. doi:10.2105/AJPH.2005.069310

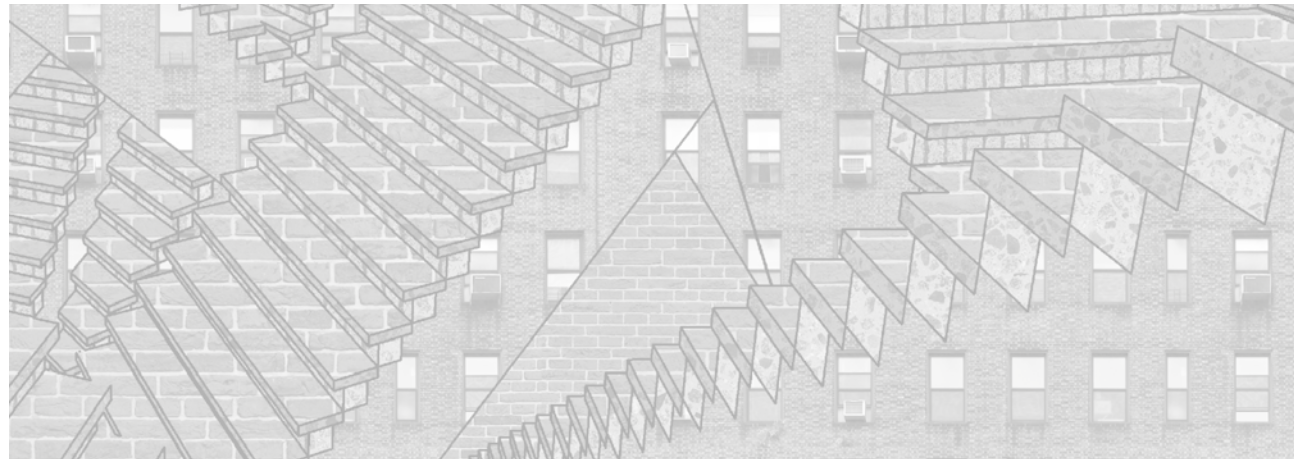
Wennink, J., & Wijngaarden, B. V. (2004). *Quality of life and care (QoLC). Kwaliteit van leven en vervulling zorgwensen [Quality of Life and Care (QoLC). Quality of life and fulfilling of care needs]*. Utrecht.

Wolf, J., Zwikker, M., Nicholas, S., Van Bakel, H., Reinking, D., & Van Leiden, I. (2002). *Op achterstand. Een onderzoek naar mensen in de marge van Den Haag*. Utrecht.

Zuvekas, S. H., & Hill, S. C. (2000). Income and employment among homeless people: the role of mental health, health and substance abuse. *The Journal of Mental Health Policy and Economics*, 3(3), 153–163. Retrieved from www.ncbi.nlm.nih.gov/pubmed/11967451

chapter 8

General discussion



General discussion

8.1 Introduction

CODA-G4 is a unique study: to our knowledge no cohort study of this size has been performed among homeless people in Europe which collected rich information by means of face-to-face interviews in the past decade. Although several register-based cohort studies among the homeless have been performed (Morrison, 2009; Nielsen, Hjorthøj, Erlangsen, & Nordentoft, 2011; Slockers et al., 2015), our personal interviews with homeless people enabled us to include their perspective.

The aim of this thesis was: a) to explore factors - substance use, intellectual disability and care needs - related to homelessness and their development over time among homeless people in the Netherlands, b) to investigate predictors of stable housing, and c) to explore changes in indicators of social exclusion and the association between changes in indicators of social exclusion and psychological distress.
These aims were operationalised by means of the following research questions:

1. What is the prevalence of substance use, substance misuse and dependence among Dutch homeless people and what is their pattern of substance use over time?
2. What is the prevalence of intellectual disability among Dutch homeless people and is intellectual disability related to psychosocial problems?
3. What are the care needs of Dutch homeless people with and without an intellectual disability and how do these care needs develop over time?
4. What is the prevalence of stable housing among Dutch homeless people and what are predictors of stable housing 2.5 years after they report to the social relief system?
5. What are the changes in indicators of social exclusion among Dutch homeless people and are changes in indicators of social exclusion associated with changes in psychological distress over a period of 2.5 years after reporting to the social relief system?

This final chapter starts by summarising the main findings of the studies in relation to the research questions (§8.2). Then, methodological issues are addressed (§8.3) and we reflect on the main findings and the study in general (§8.4). Finally, implications for research, practice and policy are discussed (§8.5) and we end with a general conclusion (§8.6).

8.2 Answering the research questions

Research question 1: What is the prevalence of substance use, substance misuse and dependence among Dutch homeless people and what is their pattern of substance use over time?
Chapter 3 addresses the prevalence of substance use among homeless people in the Netherlands, the pattern of their use and the relationship with their housing status at follow-up. The study shows that 57.7% of the participants were using one or more substances at baseline. Most of the substance-using participants used cannabis or alcohol (≥ 5 units on one occasion); the use of hard drugs was relatively rare. Of the cohort, 27.0% could be classified as a substance misuser and 20.9% as substance dependent. Participants who were a substance user had a more disadvantageous housing situation at 1.5-year follow-up than those who were not a substance user.

Research question 2: What is the prevalence of intellectual disability among Dutch homeless people and is intellectual disability related to psychosocial problems?
Chapter 4 presents a cross-sectional study examining the prevalence of a suspected intellectual disability among homeless people in the Netherlands, as well as the relationship between a suspected intellectual disability and psychosocial problems in this group. The psychosocial problems examined in this study were: psychological distress, substance use, substance misuse, and substance dependence. It was found that the prevalence of suspected intellectual disability among this cohort of homeless people was 29.5%. Regarding psychosocial problems, relationships were found between a suspected intellectual disability and elevated levels of psychological distress. In addition, homeless people with a suspected intellectual disability were more likely to be substance dependent than homeless people without a suspected intellectual disability, but did not report more substance use in general.

Research question 3: What are the care needs of Dutch homeless people with and without an intellectual disability and how do these care needs develop over time?
Chapter 5 explores self-reported care needs within a broad range of life domains between baseline and 1.5-year follow-up among homeless people in the Netherlands with and without a suspected intellectual disability. The study revealed no significant differences between participants with and without a suspected intellectual disability on: a) the number of life domains with an unmet and a met care need both at baseline and at follow-up, and on b) ‘no care needs’ at baseline. However, at follow-up, participants with a suspected intellectual disability reported ‘no care needs’ on fewer domains than participants without a suspected intellectual disability, while at baseline there were no differences between these groups. Between baseline and follow-up, ‘met care needs’ showed a significant decrease on housing for both groups, and increased on finances and dental care for participants with a suspected intellectual disability.

At follow-up, participants with a suspected intellectual disability more often preferred housing support available by appointment than those without a suspected intellectual disability.

Research question 4: What is the prevalence of stable housing among Dutch homeless people and what are predictors of stable housing 2.5 years after they report to the social relief system?
Chapter 6 explores stable housing at 2.5-year follow-up among homeless people in the Netherlands. Stable housing was defined as at least 90 consecutive days independently housed or living in supportive housing (owned by care organisations) at the 2.5-year follow-up interview. The study also reports on the predictors of being stably housed at follow-up, separately for housing stability with and without including the perspective of the participants on their housing status (i.e. satisfaction with the housing status). The study shows that 68.5% of the participants were stably housed at 2.5-year follow-up, and 51.1% were stably housed and satisfied with their housing status. Several independent predictors of housing stability, with and without including the perspective of the participants, were identified. For both the definitions of housing stability, being arrested and having a high level of somatisation were negative predictors of housing stability. Regarding stable housing and being satisfied with the housing status, having higher debts was also a negative predictor, whereas for stable housing without inclusion of the homeless people's perspective, unmet care needs was also a negative predictor of stable housing. Of all significant predictors, being arrested was the strongest predictor of housing instability at follow-up.

Research question 5: What are the changes in indicators of social exclusion among Dutch homeless people and are changes in indicators of social exclusion associated with changes in psychological distress over a period of 2.5 years after reporting to the social relief system?
Chapter 7 examines changes in indicators of social exclusion among homeless people in the Netherlands over a period of 2.5 years after reporting to the social relief system. It also explores whether changes in indicators of social exclusion are associated with changes in psychological distress over a period of 2.5 years. For all of the four dimensions of social exclusion, i.e. 'material deprivation', 'access to social rights', 'social participation' and 'cultural integration', at least one indicator improved significantly between baseline and 2.5-year follow-up. With regard to the dimension 'material deprivation', participants reported more satisfied resources for basic needs (e.g. having enough money to cover food, clothing, housing, etc.). However, financial debts did not significantly improve and the majority of the participants still had high debts at follow-up. With regard to 'access to social rights', the results showed a remarkable improvement in the indicator 'stable housing': when entering the social relief system none of the participants were stably housed whereas 2.5 years later 66.7% were stably housed. Also, less unmet care needs and more health insurance coverage were reported. With regard to 'social participation', there was more social support from family and friends, more relatedness to others, and more participants had a job or voluntary work. Finally, with regard to 'cultural integration', less participants had been arrested or received fines. Participants reporting less unmet care needs, less health insurance coverage, more social support from family and more feelings of relatedness to others reported reduced psychological distress more frequently. Conversely, an increase in unmet care needs, more health insurance coverage and less feelings of relatedness to others were related to an increase in psychological distress.

8.3 Methodological considerations

The main strengths of this study are the relatively long follow-up period of 2.5 years, the large sample size, and the availability of follow-up data with a satisfactory follow-up rate of almost 75% at the final measurement. However, some methodological issues need to be addressed. The studies presented in this thesis should be interpreted in the light of these methodological issues (see below) concerning the study population, data assessment, the study design and the analytic approach.

8.3.1 Study population

Several issues related to the study population in CODA-G4 should be taken into account when interpreting the results. These issues had an impact on the external validity and the generalisability of the results of this thesis.

Initial non-response
No data were available on the number of potential participants who were initially invited to participate in CODA-G4, as it was unfeasible to systematically collect data on how many potential participants were approached and how many refused to participate. Consequently, no initial non-response data were available. However, as comparison between the total group of homeless adults and young adults who reported themselves at a central access point for social relief in 2011 and the study participants revealed, adult participants were representative in terms of age and gender and young adult participants were representative in terms of age but, in this subgroup, males were overrepresented. This overrepresentation of males among the young adult participants might have influenced the generalisability of the results. However, because most associations were controlled for age and gender, the influence of this over-representation in the associations investigated in this theses is expected to be limited. The influence of the overrepresentation of males among the young adult participants with regard to the whole cohort is also limited, because young adults were a relatively small group in this cohort, namely 25.1%. However, regarding the prevalence of substance use, substance misuse and substance dependence, this overrepresentation may have led to an overestimation of the prevalence of substance use disorders, because substance use disorders are much more prevalent among males than among females (De Graaf, Ten Have, Van Gool, & Van Dorsselaer, 2012). In contrast, gender differences regarding intellectual disability are not evident in the general population (Leonard & Wen, 2002), implying that the over-representations of males among the young adult participants did not have a large impact on the prevalence of intellectual disability as was presented.

Subgroup of homeless people in CODA-G4
Homeless people who reported to a central access point for social relief and were accepted for starting an individual programme plan were invited to participate in CODA-G4. As it is obligatory for every homeless person to report to a central access point for social relief in order to gain access to social relief facilities, a substantial part of the Dutch homeless population is covered by the selection criterion of CODA-G4. However, only people who satisfied the criteria set by the four major cities in the Netherlands are accepted for social relief facilities. These criteria include: being at least 18 years of age, having legal

residence in the Netherlands, residing in the region of application for at least two years during the last three years, having abandoned the home situation, and being unable to hold one's own in society. This implies that some groups of homeless people were not invited to participate in CODA-G4. Subgroups not included in this study were, for example, undocumented homeless people, homeless refugees, and homeless people who do not make use of social relief facilities. No reliable information is available regarding the size of these 'hidden' subgroups. The results presented in this thesis regarding prevalences (e.g. on intellectual disability and substance use) are not generalisable to these subgroups because their characteristics probably differ substantially from those of the CODA-G4 participants. Merging these groups might, thus, lead to a diffuse picture regarding prevalences. Therefore, it is recommended to analyse these subgroups separately.

Also, the prevalences reported in this thesis may not be generalisable to homeless people in other countries, as the size and profile of homeless populations differ considerably per country. For example, differences in the prevalence of different types of substances between countries have been reported (Barrio et al., 2013; European Monitoring Centre for Drugs and Drug Addiction, 2014). In addition, homelessness policies differ between countries, which has an impact on the outcomes for homeless people (Boesveldt, 2015) and limits the generalisability. Apart from examining prevalences, we also explored associations. Exploring associations requires variance in the concepts measured, which makes the results of the associations to homeless people in other countries more likely to be generalisable. For example, when the use of cannabis is related to certain health problems in one country, it is likely that this association will be found in another country. Such an association is irrespective of the prevalence of cannabis use within a country. Nevertheless, the differences between countries in 1) the profile of homeless populations and 2) in homelessness policies, stresses the importance of having local data on homelessness.

Loss to follow-up

When using a longitudinal study design for homeless people, it is inevitable that there will be loss to follow-up; nevertheless, great efforts were made to minimise this loss. This resulted in a high response rate of almost 75% of the cohort at 2.5-year follow-up. However, a comparison of the baseline variables of respondents and non-respondents at 2.5-year follow up revealed that selective non-response had taken place. There was selective non-response of participants who were younger and had the lowest level of education at baseline. As shown in Chapter 6, the lowest level of education was univariately negatively associated with stable housing. Therefore, if selective loss to follow-up has biased our findings, it might have resulted in an overestimation of the prevalence of stably housed participants and an underestimation of the strength of the relation between the lowest level of education and stable housing due to reduced statistical power. However, because the lowest level of education was not a multivariate predictor of stable housing and the variance in education level was still sufficient, this selective loss to follow-up is not likely to have had a substantial impact on these findings.

8.3.2 Assessment issues

In this thesis, data were assessed through orally administered questionnaires by a team of interviewers who met the participants four times during 2.5 years. Implications related to the use of this assessment method are discussed below.

Self-report

All data were collected by means of self-report. This fitted well with the main focus of CODA-G4, i.e. the perspective of homeless people. However, self-reports have some drawbacks, such as potential under-reporting or over-reporting of certain factors. For example, underestimation of the consumption of substances might have occurred. Nevertheless, in the general population self-report measures have shown reasonable levels of reliability and validity when measuring both alcohol consumption (Del Boca & Darkes, 2003) and cannabis consumption (Copeland, Swift, Roffman, & Stephens, 2001). In addition, it has been shown that homeless people are fairly accurate reporters (Gelberg & Siecke, 1997). We have applied methods that enhance the reliability of self-reports as suggested by Gelberg and Siecke (1997). Those methods include 1) concentrating on recent events thereby limiting recall bias; 2) allowing the respondent to answer questions at his or her own pace to avoid pressuring them into giving a possibly incorrect answer; 3) the interviewers established rapport with the respondents and they created a nonthreatening environment; and 4) the respondent's privacy was ensured and the interviewers did not wear any symbols of authority, such as a white lab coat or very formal clothing.

Validity of the questionnaires

The majority of the questionnaires used in CODA-G4 were reliable and valid, as demonstrated by previous studies. However, most of these questionnaires were used in studies investigating the general population. The homeless population in this cohort differ from the general population with respect to, for example, the higher prevalence of substance use and the higher prevalence of intellectual disability. We anticipated this issue by means of the following measures: participants could take a break during the interview, missing answers were allowed in case they did not know what to answer or did not want to answer, and the questionnaires were presented orally to take into account participants who may have trouble with reading.

Use of screeners

It was not feasible to use full diagnostic instruments in CODA-G4 due to the already lengthy questionnaire (time per interview: 1.5-2 hours) in which we aimed to assess a complete overview of the situation of homeless people and cover a broad range of life domains. Therefore, we used short questionnaires, or screeners, to assess the characteristics and/or problems of the participants. To investigate a suspected intellectual disability, we used a screening index of intellectual abilities: the Hayes Ability Screening Index (HASI) (Hayes, 2000). However, only after a full-scale diagnostic assessment (including intellectual functioning, concurrent deficits in adaptive behaviour and manifestations before the age of 18 years) (Schalock et al. 2010), can a diagnosis of intellectual disability be made. The same applies to the measurement of psychological distress (depression, somatisation, anxiety and general psychological distress). Participants scoring 'high' on the depression scale of the BSI-18 do not necessarily have a DSM-5 diagnosis of a depressive disorder, but it does give an indication of the possible presence of a depressive disorder.

8.3.3 Study design

All data in this thesis were derived from CODA-G4, which is a prospective cohort study. Both cross-sectional and longitudinal designs were applied to answer the research questions. Cross-sectional designs exclude causal interpretations as they are carried out at one time point only and give no indication of the sequence of events (Levin, 2006). In this thesis, most chapters incorporated a longitudinal design. However, although a longitudinal design has important advantages (such as determining patterns and exploring cause and effect relationships) there are also limitations. In the studies presented in this thesis, albeit applying longitudinal designs, we were very reluctant about making causal attributions. For example, because housing status and substance use were assessed at fixed time points and were not monitored continuously, we cannot make a causal attribution between substance use and housing status. Monitoring these variables on a continuous basis or directly after a 'change' has happened (e.g. a homeless person got housed) would have facilitated examining causal effects of a change in housing status or a change in substance use. However, because this study did not monitor variables in this way, the benefits of a longitudinal approach could not be fully exploited.

Confounding factors

Confounding due to unmeasured variables cannot be ruled out in observational studies such as CODA-G4. This might particularly apply to the complex topic of homelessness, in which a broad range of individual and contextual factors play a role. For example, we did not investigate whether and, if so, which psychiatric diagnoses were determined among the participants. For example, the prevalence of psychotic illness is substantially higher in homeless populations than in community estimates (Fazel, Khosla, Doll, & Geddes, 2008), which might have influenced the outcomes. Nor did we take into account specific policy measures that were in force in (one of) the four cities. For example, had specific housing policies (which may differ between the four cities) been present, this might have prioritised certain subgroups in the allocation of a house, which would influence the housing stability at follow-up of certain subgroups. Also, differences in the Municipal Debt Assistance Act between the cities might have had an impact on, for example, the amount of debts and the housing stability of the participants. In addition, in the period between the two measurements, many other events or changes could have taken place that might compete with the variables under investigation. Such competing factors may also affect the internal validity of the study.

8.3.4 Analytic approach

Various statistical analyses were conducted (depending on the research question) including χ^2 tests, multinomial logistic regression analysis, repeated-measures analysis of covariance (ANCOVA), McNemar–Bowker tests and univariate and multivariate logistic regression analyses.
This section discusses the analytic approach, including the handling of missing data, data transformation, and the explained variance.

Missing data

Occasional missing data were removed from the analyses. The questionnaires were administered face-to-face by the interviewers; the use of a programmed questionnaire (on a laptop) which gave a warning when an answer was missing, minimised the number of missing values for most of the variables.

Data transformation

Various variables were dichotomised because norm scores were available (e.g. for psychological distress) or when they showed a skewed distribution and multiple outliers. For example, the amount of debts was dichotomised into 'high debts' (≥ 1,000 euro), and 'no high debts' (< 1,000 euro). An advantage of dichotomisation is that it allows a more meaningful interpretation of the findings and encourages a 'risk factor' approach, which helps in targeting intervention efforts (Farrington & Loeber, 2000). However, there are also drawbacks of dichotomising variables. These include loss of information, loss of power and the potential to overlook non-linear relationships (MacCallum, Zhang, Preacher, & Rucker, 2002). The results must be interpreted in the light of these issues.

Explained variance

A final consideration when interpreting the findings of this thesis is related to the amount of explained variance. Although in most chapters we investigated associations between variables, in Chapter 6 prediction models were applied to investigate predictors of stable housing. The variables in the models were based on scientific research, and practical and policy relevance. The percentage of explained variance of the models in this chapter were relatively low (i.e. 12% and 13%), indicating that other relevant factors that play a role in predicting stable housing were not included. Thus, although the associations were statistically significant, their practical relevance may be limited. The explained variance in these models might be improved by including features of the system, the environment and housing policies in addition to individual factors. Also, interaction effects between individual factors and features of the system might improve the models; however, these factors were beyond the scope of the present study. In future research, it would be relevant to investigate which factors account for the remaining 88% of the variance in stable housing. When the number of variables explaining the unexplained variance is limited, this implies that the relevance of the variables that we identified have limited value. However, the remaining variance might also be explained by a large variety of factors that together explain an equally small part of the variance. It is conceivable that this occurred in relation to this complex topic. If this was the case, then those factors that explain a small part of the variance (as found in our study) are indeed also relevant.

8.4 Reflection on the findings and the study

8.4.1 Reflection on the findings

Stable housing

We found that 68.5% of this cohort of Dutch homeless people who reported to a central access point for social relief in 2011 were stably housed at 2.5-year follow-up. This prevalence of housing stability among our participants is similar to that of two previous studies among homeless people in Canada (Aubry, Klodawsky, & Coulombe, 2012) and the USA (Orwin, Scott, & Arieira, 2005). When we included the perspective of the initially homeless people in the definition of housing stability, we found that 51.1% were stably housed and satisfied with their housing status. The chance of long-term housing stability is likely to be higher among the subgroup who is satisfied with their housing status, as a positive relation

between housing satisfaction and residential stability has been demonstrated (Srebnik, Livingston, Gordon, & King, 1995). Although being housed is an important step forward, it is a *first* step: housing homeless people does not automatically lead to their social integration (Tsai, Mares, & Rosenheck, 2012). In addition, although first-time homeless people often return to independent housing, they remain a vulnerable group after exiting the shelter and returning to the poor communities from which they generally have emerged (Caton et al., 2005). To maintain a stable housing situation, progress and stability in other life domains is important. For example, studies have shown that employment and having an income are positive predictors of housing stability (Caton et al., 2005; Zlotnick, Robertson, & Lahiff, 1999). However, the majority of the participants in CODA-G4 still have high debts after 2.5 years and do not have work or voluntary work. Thus, further steps are needed to promote a long-term stable and favourable situation. We will elaborate on this in section 8.5.2 (Recommendations for policy and practice).
It is noteworthy that 31.5% of the participants is still unstably housed at 2.5-year follow-up; this subgroup are at risk of becoming long-term homeless and remain a substantial challenge for society/community, care providers and policymakers. The housing needs of this subgroup were evidently not well addressed, because our results show that almost all participants (around 98%) preferred independent housing. This group was not stably housed after 2.5 years, despite that considerable efforts have been made in the Netherlands to reduce and prevent long-term homelessness (Dutch Government and four major cities, 2011).

Special attention is required for the subgroup with a suspected intellectual disability (around 30% of our study population). This subgroup preferred housing support available by appointment more often than participants without a suspected intellectual disability. The results also suggest that the care needs of those with a suspected intellectual disability lasted longer than those without a suspected intellectual disability. As Thompson et al. (2009) stated: "*Support needs reflect a limitation in functioning as a result of either personal capacity or the context in which the person is functioning.*" From that viewpoint, the care needs of homeless people without a suspected intellectual disability may be seen more as a result of the context (i.e. their acute homelessness at baseline), while the enduring care needs of those with a suspected intellectual disability may to a larger extent be explained by their personal capacity. Therefore, the care needs of homeless people with a suspected intellectual disability can be seen as an enduring rather than a temporary characteristic. This applies to housing support and support on other domains, to enable and maintain housing stability among this subgroup.

Predictors of stable housing
Our results show that those participants who (at baseline) had been arrested, had a high level of somatisation, had more unmet care needs and had higher debts, were overrepresented among the long-term unstably housed participants. Arrest history was the strongest negative predictor of stable housing and is an important predictor of homelessness (Caton et al., 2005; Mizuno et al., 2009; Riley et al., 2007). Because the chance of reoffending is higher when suitable housing is not available upon release (Loucks, 2007), this could cause a negative cycle which has to be broken. The implications of this result for policy and practice are discussed in section 8.5.2.

Substance use was found to be an independent predictor of housing instability in several studies (Aubry et al., 2012; North, Eyrich-Garg, Pollio, & Thirthalli, 2010; Orwin et al., 2005; Palepu, Marshall, Lai, Wood, & Kerr, 2010). However, this result was not replicated in this study. The contrast between the results of this study and others may be explained by the type of substances used in our cohort (i.e. cannabis and alcohol: Chapter 3), compared to substances that are highly prevalent in studies among homeless people in e.g. North America (e.g. cocaine and heroin) (North, Eyrich, Pollio, & Spitznagel, 2004; Palepu et al., 2010; Patterson, Somers, & Moniruzzaman, 2012). Unlike most other countries, the Netherlands has a drug policy that allows cannabis to be distributed via so-called 'coffee shops'; also, the possession of (small amounts) of cannabis for personal use is considered a misdemeanour and not a criminal offence. Therefore, cannabis-using homeless people in the Netherlands may be less criminalised and stigmatised than drug users in homeless populations in other countries who use cocaine and heroin more often. Stigmatisation towards illegal drug users varies by drug, with users of cannabis being the least stigmatised (Palamar, Kiang, & Halkitis, 2012). This lesser extent of criminalisation and stigmatisation might be an explanation for non-replication of the independent association between substance use and housing instability.

The result that having more unmet care needs was a negative predictor of stable housing might indicate that when care professionals do not respond to unmet care needs, this could hamper social integration. An individual might lose faith in care professionals when they do not respond to their care needs; this indicates that a fast response to care needs of homeless people is essential. On the other hand, it could also indicate that these people were unaware that their care needs were addressed by their care professionals. Some types of support are regularly performed 'in the background' and are not always visible for clients. In addition, it is likely that care professionals (despite their efforts) cannot address and solve all the needs of their clients due to structural contextual factors that are beyond their influence.

Social exclusion
Our investigation of social exclusion indicators among homeless people provided broad insight into their disadvantaged situation. Also, as homeless people are often the least likely to be included in common measures of social exclusion (Popay et al., 2008), we offer insight into indicators of social exclusion of this very vulnerable group. For all of the four dimensions of social exclusion, i.e. 'material deprivation', 'access to social rights', 'social participation' and 'cultural integration', at least one indicator improved significantly between baseline and 2.5-year follow-up. For example, with regard to the dimension 'material deprivation', participants reported more satisfied resources for basic needs (e.g. having enough money to cover food, clothing, housing, etc.). However, financial debts did not significantly improve and the majority of the participants still had high debts at follow-up. The percentage of participants with high debts (≥ 1,000 euros) remained at around 71%, despite that the policy measures for homeless people also aimed to improve income and target debts. We also revealed a significant association between high debts and a high level of psychological distress at both baseline and follow-up. Therefore, if reductions in high debts do take place among these participants, this might be associated with reduced psychological distress in the future. These results call for more effective solutions with regard to debts. Section §8.5.2 discussed the practical implications regarding debts.

8.4.2 Reflection on the study

The perspective of homeless people
The perspective of homeless people was included regarding their care needs, their housing support needs and their satisfaction with their housing status at follow-up. Because client satisfaction is an indicator of service quality (Altena, Beijersbergen, & Wolf, 2014) and is associated with better treatment outcomes (Hser, Evans, Huang, & Anglin, 2004), it is important to include the perspective of homeless people in research and practice.

Inclusion of the client perspective in the definition of housing stability revealed a subgroup of stably housed participants who are not satisfied with their housing status. Therefore, including the perspective of homeless people was a relevant addition to the customary definition of housing stability. The chance of long-term housing stability is likely to be lower among the subgroup who were not satisfied with their housing situation, as also found in a study reporting a positive relation between housing satisfaction and residential stability (Srebnik et al., 1995). Because the client perspective is generally lacking in studies on the prevalence of the attainment of stable housing among homeless people (Aubry et al., 2012; North et al., 2010; Orwin et al., 2005; Palepu et al., 2010; Zlotnick et al., 1999), our inclusion of the client perspective in the definition of housing stability is a new and relevant addition.

Focus on factors measured on the individual level
The focus of this thesis was on factors measured at the individual level which are related to homelessness, and whether these factors could predict housing stability 2.5 years after homeless people reported themselves to the social relief system. Unlike register-based cohort studies which have more frequently been conducted among homeless people in Europe and North America, these factors were measured by means of face-to-face interviews. Using this approach we revealed new and valuable information. We are aware that socio-structural factors (which were not explicitly taken into account in this thesis) also have a significant and important impact on the situation of homeless people. The situation of homeless people is the result of a mixture of individual circumstances and structural factors. More specifically, homelessness is a result of economic structures, housing structures, interpersonal factors and individual factors (Fitzpatrick, 2005), and these levels interact with each other.
In this study we did not measure factors on the meso level or the macro level. Labour markets, the housing system (e.g. availability of affordable housing), the economic crisis, and the organisation of debt assistance are examples of factors that play a (not to be underestimated) role in the situation of homeless people. Although these factors inevitably may have had an impact on the situation of homeless persons and therefore on the results presented here (i.e. this is the context to which all participants were exposed) we did not study this in this thesis.

The policy context
During the study period (2011 to 2015), changes in the policy context were substantial. For example, the policy focus on homelessness with the Strategy Plan for Social Relief (Dutch Government and four major cities, 2006, 2011) ended in 2013.

As part of our research, by organising several meetings/discussions with professionals in each of the four cities and with experts in the field with experience of homelessness, we gained insight as to which policy-related factors were particularly relevant. An important factor was a lack of affordable housing, which hampers the attainment of independent housing. Problems with housing corporations were also on the political agenda during the study period. The Dutch House of Representatives established a parliamentary inquiry into housing corporations in 2012 to investigate the organisation and functioning of a group of housing corporations (Parlementaire enquêtecommissie Woningcorporaties, 2014). This investigation revealed that, due to financial losses caused by mismanagement, housing corporations were selling rental houses and also increased rents. In response to these unfavourable developments, a new Housing Law was established by the Dutch Government in 2016. This law states that housing corporations have to focus on their main task: i.e. the building, renting and managing of houses that are affordable for people with lower incomes. This law may have positive effects regarding the availability of houses for homeless people.

Another change is the increased policy focus on 'self-sufficiency' of citizens: the managing of one's care needs without (extensive) public care. The Netherlands (and many other European welfare states) are replacing comprehensive welfare schemes with selective and conditional entitlements. This threatens the recognition of the needs of vulnerable citizens, which are increasingly framed as 'private' responsibilities. In addition, these reforms carry the risk of deepening the existing inequalities between assertive and non-assertive care recipients, and higher and lower income groups (Grootegoed, 2013). These measures may also have had an impact on the rising demand for the care of people with an intellectual disability in the Netherlands (Woittiez, Putman, Eggink, & Ras, 2014). In combination with the increased demands and the complexity of society (e.g. less availability of low-skilled labour, digitalisation), these policy factors may hamper full participation and the reintegration of vulnerable people, such as homeless people, and especially those with a psychiatric disorder or an intellectual disability.

8.5 Implications of the study findings

8.5.1 Future research

Longer period of follow-up
A longer period of follow-up will provide more insight into how the situation of these homeless people develops further after 2.5 years. This group, even when eventually housed, is still associated with various risk factors for (relapse into) homelessness. Additional measurements will reveal the characteristics of the stably housed initially homeless people who become homeless again after a period of being housed. Also, regarding the debt situation of homeless people a longer period of follow-up is important. Because arrangements to resolve debts can take several months or years to start, and the arrangements themselves usually last for about 3 years, a 2.5-year follow-up period is too short to draw firm conclusions about debts. Therefore, it is relevant to follow this group for a longer period of time to investigate how their debt situation develops and how it affects their lives.

Including the client perspective
Incorporating the perspective of homeless individuals was valuable and fits the current focus (in both research and policymaking) on the client's perspective; it provide insight into the care needs and housing support needs. Inclusion of the client perspective in the definition of housing stability was a new and relevant addition, and should be included when investigating stable housing in studies among homeless people. This inclusion of the client perspective in the definition of housing stability revealed a subgroup of stably housed participants who are not satisfied with their housing status; to improve care services, studies need to investigate why this subgroup is not satisfied. After clarifying these factors, appropriate steps can be taken to promote satisfaction and thereby housing stability.

Including input from professionals and experts with experience of homelessness
Our study on predicting housing stability included both evidence-based predictors and practice-based predictors. Some of these practice-based variables (i.e. 'unmet care needs' and 'having high debts') were significant negative predictors of housing stability 2.5 years later. As these variables are generally not included in studies predicting housing stability among the homeless, this suggests that exploring characteristics based on recommendations made by professionals in the field of social care and experts with experience of homelessness could be a relevant addition to using only evidence-based variables in prediction studies. Another valuable step would be to investigate the underlying mechanisms of these practice-based variables.
An important advantage of including input from professionals and experts with experience of homelessness into the research design, is that this helps to bridge the gap between research and practice. In this way, professionals are more involved as they can indicate which factors are important to study to improve their practice.

From an individual-level focus to an ecological approach
Also, taking socio-structural factors explicitly into account in future studies will promote better understanding of the situation of homeless people and which measures are needed to improve their situation. A future study could also investigate aspects such as the labour market and social policy per city, as important differences exist between cities. In the Netherlands, in 2015 decentralisation of social policy took place. This means that municipalities gained a greater responsibility for the organisation of suitable support for citizens who cannot participate in society on their own. Therefore, it is of increasing importance to take into account local differences when studying socio-structural factors.
However, despite local differences, studying effective elements of policies on improving the situation of homeless people remains highly relevant. These elements may also be generalisable and applicable to other cities or countries.
Ideally, future studies should incorporate factors measured at the individual level and factors measured at the macro or meso level (i.e. socio-structural factors) to investigate the interplay between these factors. This would provide insight into which measures have effect on certain subgroups of homeless people and could lead to concrete policy implications. Bronfenbrenner's ecological systems theory (Bronfenbrenner, 1994) may be a useful theoretical framework to investigate factors on multiple levels. This theory emphasises that five structures of the ecological environment play a role in human development: microsystems (e.g. individual characteristics), mesosystems (linkages among microsystems, e.g. the relationship between caregiver and the homeless individual), exosystems (e.g. the neighbourhood context), macrosystems (e.g. material resources) and chronosystems (changes over the life course). Given the complexities and multiple paths through which homelessness can affect the lives of people, the ecological systems theory could provide an appropriate framework to guide research on multiple levels.

Qualitative approach
A qualitative study would help elucidate the underlying reasons and processes with regard to the self-reported care needs and to gain insight into why the subgroup of stably housed participants is not satisfied with their housing situation. This information may lead to more concrete recommendations for caregivers and policymakers.

8.5.2 Recommendations for policy and practice

Extra attention for subgroups of homeless
The relatively large number of homeless people with an intellectual disability emphasises that expertise in the field of intellectual disability among professionals working in homeless services is required. Screening of homeless people on intellectual disability may be an effective method to identify those who are particularly vulnerable within the homeless population. Also, the additional mental health and substance use problems among this subgroup may have implications for care programmes and homeless services, and endorses the importance of the extra attention required for this subgroup. Customised care programmes, specialised housing facilities designed for homeless people with an intellectual disability, and expertise and interventions regarding working with clients with intellectual disabilities are recommended.

Our results on the predictors of stable housing after 2.5 years revealed that being arrested was the strongest negative predictor; this is in line with other studies (Caton et al., 2005; Mizuno et al., 2009; Riley et al., 2007). Screening homeless people on arrest history, gaining insight into how they became homeless after their arrest, and offering them extensive support may help to improve the rate of housing stability among this subgroup. Regarding the prevention of chronic homelessness, this finding stresses the importance of comprehensive aftercare programmes for offenders. In addition, intensive collaboration between homeless services and the criminal justice system is needed. To illustrate, professionals in the field of homelessness reported that people with unpaid fines can get (short-term) imprisonment, which can substantially disrupt a trajectory aimed at stable housing. This might lead to a situation where a client is stably housed, but loses this housing due to imprisonment and is obliged to start over again, which is an unfavourable loss of efforts.

Focus on providing housing
Due to the fact that most participants want to live independently but with housing support by appointment, 'Housing First' may be an appropriate approach to fit their needs. 'Housing First' focuses on providing homeless people with housing before providing ambulant services as needed; this approach has shown promising results among homeless people with substance use problems and psychiatric problems (Maas,

Al Shamma, Altena, Jansen, & Wolf, 2012; Tsemberis, Gulcur, & Nakae, 2004; Tsemberis, Kent, & Respress, 2012). As our results showed that participants who were substance dependent were more likely to be still homeless after 1.5 year, an approach focusing on providing homeless people with housing, regardless of their substance use, may also be effective to prevent and reduce long-term homelessness among substance-using homeless people (Tsemberis et al., 2004). This approach may also be appropriate for homeless people with a suspected intellectual disability; however, to our knowledge, has not yet been investigated.

Meeting the self-reported care needs of homeless people

To meet the self-reported care needs of these individuals, our results emphasise that care providers should initially focus on basic needs such as housing, finances, finding work and physical health (including dental care), rather than on life domains such as mental health or substance use. These findings are consistent with Maslow's hierarchy of needs (Maslow, 1943), which states that without having fulfilled basic needs, it is difficult to deal with higher order needs. The topics 'finances' and 'finding work' are discussed in more detail below.

Reduce debts

Studies have revealed the negative health consequences of having debts. To illustrate, long-term debt burden exerts a significant effect on premature mortality (Clayton, Liñares-Zegarra, & Wilson, 2015), it increases the risk for unhealthy drinking and smoking (Shaw, Agahi, & Krause, 2011), and scarcity of resources have negative cognitive consequences, which might lead people to use their resources less efficiently or make riskier financial decisions (Shah, Mullainathan, & Shafir, 2012). High debts can also be a risk for becoming homeless again. The percentage of the participants in our study having high debts did not decline. However, at 2.5-year follow up 42% reported receiving the care or assistance they wanted regarding their finances and 20% reported to have an legal arrangement for debtors who are not able to pay their creditors (Al Shamma et al., 2015). In this arrangement the debtor becomes debt free after a 3-year period whereby the creditors receive a portion of the money owed to them. However, there are several criteria for starting such an arrangement which some of the homeless population cannot meet (e.g. having no unpaid fines, having no debts due to fraud). These strict inclusion criteria may partly explain why the percentage of participants having high debts did not decline. Therefore, more appropriate solutions for debts among homeless people are needed. Accessible, rapid and effective help for as long as needed with resolving their debts and to maintain being free of debt is essential for further improvements in the situation of (formerly) homeless people and to maintain housing stability. This is also in line with the self-reported care needs, which were for the domain 'finances' among the most frequently reported care needs. Professionals who assist homeless people, debt advisers and debt collection agencies should collaborate to effectively reduce and prevent debts. In addition, government measures are needed.

Promote labour participation

Employment has several important positive effects. An extensive review study summarised the positive effects of having work (Waddell & Burton, 2006). These include: obtaining adequate economic resources which are essential for material well-being and full participation; meeting psychosocial needs in societies where employment is the norm and promoting individual identity, social roles and social status. Employment is also beneficial for mental health (Thomas, Benzeval, & Stansfeld, 2005), personal development and self-esteem (Marmot, Friel, Bell, Houweling, & Taylor, 2008). In addition, for disabled people and people with mental health problems (which is the case for a significant part of the homeless population) returning to work helps to promote recovery and rehabilitation and reduces the chance of chronic disability, long-term incapacity for work and social exclusion (Waddell & Burton, 2006). Together with finding housing and finances, 'finding work' was among the most frequently reported needs in this study; thus, having a job is important for homeless people. To promote labour participation among (formerly) homeless people, an accessible labour market for marginalised groups is essential. Since 2015, municipalities in the Netherlands have greater responsibility in the social domain, including work, income and services for people with disabilities and for people who need assistance in finding work. Therefore, local governments need to promote labour participation of vulnerable people, such as formerly homeless individuals. It is important to deliver individual and tailor-made support, which match the different competence levels and backgrounds of clients. Because participants preferred to have paid work and increased economic resources, a regular job is the first choice. This was also the goal of the Participation Act which started in 2015: get more people, also those with an occupational impairment, to work. As part of the Participation Act, national legislation was initiated to promote work for people with a disadvantage from the labour market by means of 'hiring subsidies' for employers. Participation places have been created to benefit recipients who have little opportunity to find employment, e.g. due to personal constraints. By taking on a participation place they can gain work experience and opportunities that contribute to integration into regular work in the long run, while keeping their benefits. These places should ideally be an additional job within a company, thus preventing replacement effects. However, especially for people who are at a considerable distance from the labour market, such as most (formerly) homeless people, the chance of flowing into a regular job remains small (Bekker & Wilthagen, 2014). Nevertheless, positive effects of being included in work (with the exception of increased economic resources) do remain and will have a positive impact on the situation of (formerly) homeless people.

However, paid work might be too challenging for some subgroups. For such subgroups, social activation might be the highest goal achievable, i.e. becoming socially active, becoming engaged as a volunteer, or working in a sheltered workplace (Bekker & Wilthagen, 2014). For them, suitable daytime activities and sheltered work have to be fully accessible. In addition, to promote empowerment in these subgroups, they could be involved in the organisation of a daytime centre and be given some form of responsibility. For people with mental health problems, good experience has been reported with consumer-run organisations, which can promote self-esteem, social skills and independence (Brown, 2009).

Invest in ongoing care and support

At 2.5 years after these homeless people reported to the social relief system, their situation has improved on various domains, especially on housing. However, although most of them are no longer homeless, they remain a vulnerable group in terms of their (very) low education level and scarce social and economic resources. As housing homeless people does not automatically lead to social integration (Tsai et al.,

2012), formerly homeless people may benefit from interventions that focus on their social integration after housing is obtained. The so-called 'Social district teams' teams, formed in 2015 by the municipalities responsible for supporting citizens with (minor) problems and for early intervention, could play an important role in the social integration and prevention of becoming homeless again. Our results further emphasise that care providers should invest in ongoing care on life domains such as finances. However, achieving self-sufficiency and full independence on such domains is not feasible for everyone; lifelong support (for instance with finances) might be necessary for some of these homeless people. Especially for homeless people with an intellectual disability, ongoing care and support is essential and has to be accessible. Support services should take this into account when considering their care provision, and in the planning of services and policies.

Inform clients about actions

To a certain extent the reported unmet care needs by homeless people may be attributed to their unawareness of the care provided by professionals to address these needs Some services are regularly performed 'in the background' and are not always visible for clients. For example, making telephone calls or sending letters to arrange things for clients (e.g. with regard to their debts). This point was also mentioned in a meeting with clients, policymakers and care professionals in which we presented the results of CODA-G4. It may be better to involve clients with these activities, e.g. by involving them in writing letters to authorities or institutions. This helps to inform them about the progress of their trajectory and also to work together on the solutions and promote self-reliance in the future.

8.6 On the way up?

CODA-G4 provided a unique opportunity to follow a cohort of homeless people in the Netherlands and has provided valuable insight into their situation and into developments in their situation. The results of the studies presented in this thesis show that the participants are on the way up, but also that ongoing support is still required.

8.7 References

Al Shamma, S., Van Straaten, B., Boersma, S., Rodenburg, G., Van der Laan, J., Van de Mheen, D., & Wolf, J. (2015). ***Dakloze mensen in de vier grote steden: veranderingen in 2,5 jaar. Eindrapportage Coda-G4.*** Nijmegen/Rotterdam.

Altena, A. M., Beijersbergen, M. D., & Wolf, J. R. L. M. (2014). Homeless youth's experiences with shelter and community care services: Differences between service types and the relationship to overall service quality. *Children and Youth Services Review*, 46, 195–202. doi:10.1016/j.childyouth.2014.08.019

Aubry, T., Klodawsky, F., & Coulombe, D. (2012). Comparing the housing trajectories of different classes within a diverse homeless population. *American Journal of Community Psychology*, 49(1-2), 142–55. doi:10.1007/s10464-011-9444-z

Barrio, G., Montanari, L., Bravo, M. J., Guarita, B., De la Fuente, L., Pulido, J., & Vicente, J. (2013). Trends of heroin use and heroin injection epidemics in Europe: Findings from the EMCDDA treatment demand indicator (TDI). *Journal of Substance Abuse Treatment*, 45(1), 19–30. doi:10.1016/j.jsat.2012.11.002

Bekker, S., & Wilthagen, L. (2014). Stimulating job demand: The Design of Effective Hiring Subsidies in Europe. *European Employment Policy Observatory Review*, 1.

Boesveldt, N. (2015). ***Planet homeless. Governance arrangements in Amsterdam, Copenhagen, and Glasgow***. Den Haag: Eleven International Publishing.

Bronfenbrenner, U. (1994). ***Ecological models of human development. In T, Husen & T.N. Postlethwaite (Ed.), The international encyclopedia of education (2nd ed., pp 1643-1647)***. New York: Elsevier Science.

Brown, L. D. (2009). How people can benefit from mental health consumer-run organizations. *American Journal of Community Psychology*, 43(3-4), 177–188. doi:10.1007/s10464-009-9233-0

Caton, C. L. M., Dominguez, B., Schanzer, B., Hasin, D. S., Shrout, P. E., Felix, A., … Hsu, E. (2005). Risk factors for long-term homelessness: findings from a longitudinal study of first-time homeless single adults. *American Journal of Public Health*, 95(10), 1753–9. doi:10.2105/AJPH.2005.063321

Clayton, M., Liñares-Zegarra, J., & Wilson, J. O. S. (2015). Does debt affect health? Cross country evidence on the debt-health nexus. *Social Science & Medicine*, 130, 51–58. doi:10.1016/j.socscimed.2015.02.002

Copeland, J., Swift, W., Roffman, R., & Stephens, R. (2001). A randomized controlled trial of brief cognitive-behavioral interventions for cannabis use disorder. *Journal of Substance Abuse Treatment*, 21(2), 55–64; discussion 65–6. Retrieved from www.ncbi.nlm.nih.gov/pubmed/11551733

De Graaf, R., Ten Have, M., Van Gool, C., & Van Dorsselaer, S. (2012). Prevalence of mental disorders and trends from 1996 to 2009. Results from the Netherlands Mental Health Survey and Incidence Study-2. *Social Psychiatry and Psychiatric Epidemiology*, 47(2), 203–213. doi:10.1007/s00127-010-0334-8

Del Boca, F. K., & Darkes, J. (2003). The validity of self-reports of alcohol consumption: state of the science and challenges for research. *Addiction (Abingdon, England)*, *98 Suppl* 2, 1–12. Retrieved from www.ncbi.nlm.nih.gov/pubmed/14984237

Dutch Government and four major cities. (2006). ***Strategy Plan for Social Relief.***

Dutch Government and four major cities. (2011). ***Strategy Plan for Social Relief, Phase 2.***

European Monitoring Centre for Drugs and Drug Addiction. (2014). ***European Drug Report 2014: Trends and developments***. Luxembourg: Publications Office of the European Union.

Farrington, D. P., & Loeber, R. (2000). Some benefits of dichotomization in psychiatric and criminological research. *Criminal Behaviour and Mental Health*, 10(2), 100–122. doi:10.1002/cbm.349

Fazel, S., Khosla, V., Doll, H., & Geddes, J. (2008). The prevalence of mental disorders among the homeless in western countries: systematic review and meta-regression analysis. *PLoS Medicine*, 5(12), e225. doi:10.1371/journal.pmed.0050225

Fitzpatrick, S. (2005). Explaining Homelessness: a Critical Realist Perspective. *Housing, Theory and Society*, 22(1), 1–17. doi:10.1080/14036090510034563

Gelberg, L., & Siecke, N. (1997). Accuracy of homeless adults' self-reports. *Medical Care*, 35(3), 287–290. doi:10.1097/00005650-199703000-00008

Grootegoed, E. M. (2013). *Dignity of dependence: welfare state reform and the struggle for respect*. Universiteit van Amsterdam.

Hayes, S. (2000). *Hayes Ability Screening Index (HASI) manual. Behavioural sciences in medicine*. Sydney.

Hser, Y.-I., Evans, E., Huang, D., & Anglin, D. M. (2004). Relationship Between Drug Treatment Services, Retention, and Outcomes. *Psychiatric Services*, 55(7), 767–774.

Leonard, H., & Wen, X. (2002). The epidemiology of mental retardation: challenges and opportunities in the new millennium. *Mental Retardation and Developmental Disabilities Research Reviews*, 8(3), 117–34. doi:10.1002/mrdd.10031

Levin, K. A. (2006). Study design III: Cross-sectional studies. *Evidence-Based Dentistry*, 7(1), 24–25. doi:10.1038/sj.ebd.6400375

Loucks, N. (2007). *Housing Needs of Prisoners and Ex-Prisoners*. Glasgow.

Maas, M., Al Shamma, S., Altena, A., Jansen, N., & Wolf, J. (2012). *Discus Amsterdam: Housing First Evaluatie van de werkzaamheid*. Nijmegen.

MacCallum, R. C., Zhang, S., Preacher, K. J., & Rucker, D. D. (2002). On the practice of dichotomization of quantitative variables. *Psychological Methods*, 7(1), 19–40. doi:10.1037/1082-989X.7.1.19

Marmot, M., Friel, S., Bell, R., Houweling, T. A., & Taylor, S. (2008). Closing the gap in a generation: health equity through action on the social determinants of health. *The Lancet*, 372(9650), 1661–1669. doi:10.1016/S0140-6736(08)61690-6

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, 50(4), 370–396. doi:10.1037/h0054346

Mizuno, Y., Purcell, D. W., Zhang, J., Knowlton, A. R., De Varona, M., Arnsten, J. H., & Knight, K. R. (2009). Predictors of current housing status among HIV-seropositive injection drug users (IDUs): Results from a 1-year study. *AIDS and Behavio*r, 13, 165–172. doi:10.1007/s10461-008-9364-6

Morrison, D. S. (2009). Homelessness as an independent risk factor for mortality: Results from a retrospective cohort study. *International Journal of Epidemiology*, 38(3), 877–883. doi:10.1093/ije/dyp160

Nielsen, S. F., Hjorthøj, C. R., Erlangsen, A., & Nordentoft, M. (2011). Psychiatric disorders and mortality among people in homeless shelters in Denmark: A nationwide register-based cohort study. *The Lancet*, 377(9784), 2205–2214. doi:10.1016/S0140-6736(11)60747-2

North, C. S., Eyrich, K. M., Pollio, D. E., & Spitznagel, E. L. (2004). Are rates of psychiatric disorders in the homeless population changing? *American Journal of Public Health*, 94(1), 103–8. Retrieved from www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1449834&tool=pmcentrez&rendertype=abstract

North, C. S., Eyrich-Garg, K. M., Pollio, D. E., & Thirthalli, J. (2010). A prospective study of substance use and housing stability in a homeless population. *Social Psychiatry and Psychiatric Epidemiology*, 45(11), 1055–62. doi:10.1007/s00127-009-0144-z

Orwin, R. G., Scott, C. K., & Arieira, C. (2005). Transitions through homelessness and factors that predict them. *Journal of Substance Abuse Treatment*, 28(2), S23–S39. doi:10.1016/j.jsat.2004.10.011

Palamar, J. J., Kiang, M. V, & Halkitis, P. N. (2012). Predictors of stigmatization towards use of various illicit drugs among emerging adults. *Journal of Psychoactive Drugs*, 44(3), 243–251. doi:10.1080/02791072.2012.703510

Palepu, A., Marshall, B. D. L., Lai, C., Wood, E., & Kerr, T. (2010). Addiction treatment and stable housing among a cohort of injection drug users. *PloS One*, 5(7), e11697. doi:10.1371/journal.pone.0011697

Parlementaire enquêtecommissie Woningcorporaties. (2014). *Hoofdrapport parlementaire enquêtecommissie Woningcorporaties*. Den Haag.

Patterson, M. L., Somers, J. M., & Moniruzzaman, A. (2012). Prolonged and persistent homelessness: multivariable analyses in a cohort experiencing current homelessness and mental illness in Vancouver, British Columbia. *Mental Health and Substance Use*, 5(2), 85–101. doi:10.1080/17523281.2011.618143

Popay, J., Escorel, S., Hernández, M., Johnston, H., Mathieson, J., & Rispel, L. (2008). *Understanding and tackling social exclusion. Final report to the WHO Commission on Social Determinants of Health from the Social Exclusion Knowledge Network*. Geneva. doi:10.1177/1744987110370529

Riley, E. D., Weiser, S. D., Sorensen, J. L., Dilworth, S., Cohen, J., & Neilands, T. B. (2007). Housing patterns and correlates of homelessness differ by gender among individuals using San Francisco free food programs. *Journal of Urban Health*, 84(3), 415–422. doi:10.1007/s11524-006-9153-3

Schalock, R. L., Borthwick-Duffy, S. A., Bradley, V. J., Buntinx, W. H., Coulter, D. L., Craig, E. M., Yeager, M. H. (2010). *Intellectual disability: Definition, classification, and systems of support*s. Washington, DC: American Association on Intellectual and Developmental Disabilities.

Shah, A. K., Mullainathan, S., & Shafir, E. (2012). Some Consequences of Having Too Little. *Science*, *338*(6107), 682–685. doi:10.1126/science.1222426

Shaw, B. a, Agahi, N., & Krause, N. (2011). Are changes in financial strain associated with changes in alcohol use and smoking among older adults?. *Journal of Studies on Alcohol and Drugs*, 72(6), 917–925. Retrieved from ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=medl&NEWS=N&AN=22051205

Slockers, M. T., Nusselder, W. J., Looman, C. W. N., Slockers, C. J. T., Krol, L., & van Beeck, E. F. (2015). The effect of local policy actions on mortality among homeless people: a before-after study. *The European Journal of Public Health*, 25(2), 290–292. doi:10.1093/eurpub/cku155

Srebnik, D., Livingston, J., Gordon, L., & King, D. (1995). Housing choice and community success for individuals with serious and persistent mental illness. *Community Mental Health Journal*, 31(2), 139–152. doi:10.1007/BF02188763

Thomas, C., Benzeval, M., & Stansfeld, S. a. (2005). Employment transitions and mental health: an analysis from the British household panel survey. *Journal of Epidemiology and Community Health*, 59(3), 243–249. doi:10.1136/jech.2004.019778

Thompson, J. R., Bradley, V. J., Buntinx, W. H. E., Schalock, R. L., Shogren, K. a, Snell, M. E., … Yeager, M. H. (2009). Conceptualizing supports and the support needs of people with intellectual disability. *Intellectual and Developmental Disabilities*, 47(2), 135–46. doi:10.1352/1934-9556-47.2.135

Tsai, J., Mares, A. S., & Rosenheck, R. A. (2012). Does Housing Chronically Homeless Adults Lead to Social Integration? *Psychiatric Services*, 63(5), 427. doi:10.1176/appi.ps.201100047

Tsemberis, S., Gulcur, L., & Nakae, M. (2004). Housing First, Consumer Choice, and Harm Reduction for Homeless Individuals With a Dual Diagnosis. *American Journal of Public Health*, 94(4), 651–656. doi:10.2105/AJPH.94.4.651

Tsemberis, S., Kent, D., & Respress, C. (2012). Housing stability and recovery among chronically homeless persons with co-occuring disorders in Washington, DC. *American Journal of Public Health*, 102(1), 13–6. doi:10.2105/AJPH.2011.300320

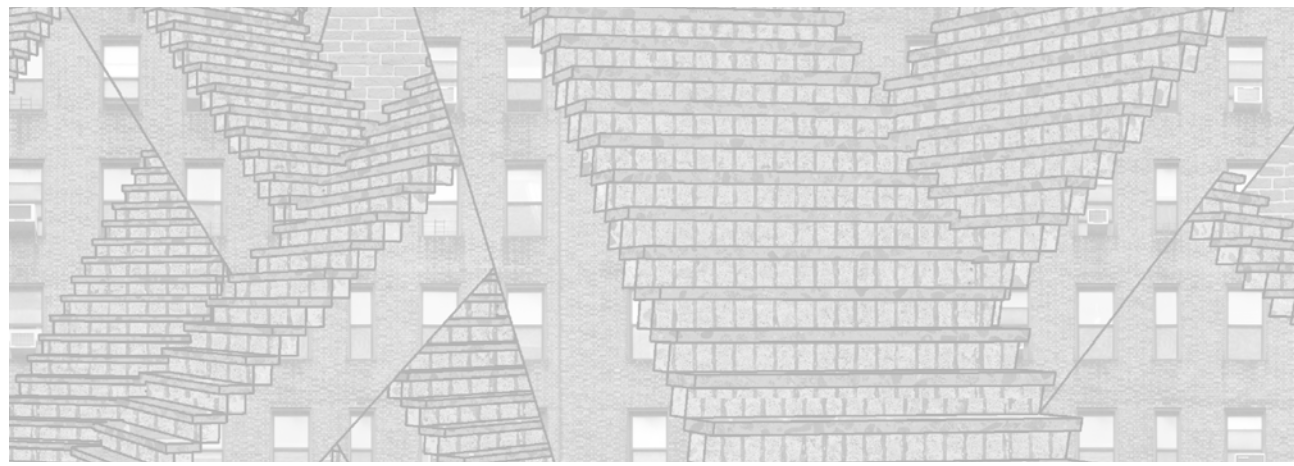
Waddell, G., & Burton, A. (2006). *Is Work Good For Your Health and Well-Being? The Stationery Office*. London. doi:10.1093/occmed/kql174

Woittiez, I., Putman, L., Eggink, E., & Ras, M. (2014). *Zorg beter begrepen. Verklaringen voor de groeiende vraag naar zorg voor mensen met een verstandelijke beperking*. Den Haag.

Zlotnick, C., Robertson, M. J., & Lahiff, M. (1999). Getting off the streets: Economic resources and residential exits from homelessness. *Journal of Community Psychology*, 27(2), 209–224.

summary

Samenvatting



Summary

It was estimated that 31,000 people in the Netherlands were literally homeless in 2015. Homeless people live in a vulnerable situation and often suffer from health problems, psychological problems and/or psychosocial problems. In general, the majority of homeless people in the Netherlands consists of single men, around 40 years of age, having a non-native Dutch background, low educated, and with a mix of both material problems (financial problems, low income, debts) and immaterial problems (mental and/or physical health problems).

The Ministry of Health, Welfare and Sport of the Netherlands requested IVO Addiction Research Institute and Impuls - Netherlands Center for Social Care Research of the Radboud university medical center to conduct a cohort study among homeless people. This study was conducted during the term of the Strategy Plan for Social Relief: a new policy to tackle homelessness which was implemented in the four major cities in the Netherlands, i.e. Amsterdam, Rotterdam, The Hague and Utrecht between 2006 and 2013. The cohort study - called CODA-G4 – took place among homeless people covered by this policy. CODA-G4 is an observational longitudinal multi-site cohort study which followed over 500 homeless people in Amsterdam, Rotterdam, The Hague and Utrecht (i.e. the 'G4') for a period of 2.5 years, starting in 2011. The participants were interviewed face-to-face by trained interviewers four times during the study period. The final interview took place in 2014. This thesis is based on CODA-G4 data.

This thesis aimed a) to explore factors - substance use, intellectual disability and care needs - related to homelessness and their development over time among homeless people in the Netherlands, b) to investigate predictors of stable housing, and c) to explore changes in indicators of social exclusion and the association between changes in indicators of social exclusion and psychological distress.

In this thesis, we investigated the individual perspective of homeless people. In particular, we explored the following factors, as well as their development over time:

1) substance use: in the scientific literature substance use is consistently identified as an important factor related to homelessness;
2) intellectual disability: this factor is receiving increasing attention in research on homelessness and practice, and seems to play a role in a relatively large subgroup of homeless populations; and
3) care needs: investigating self-reported care needs is important to gain insight into what services are needed to fulfil the care needs of homeless people.

All these factors are relevant for practice and for policymaking: e.g. improved understanding of substance use, intellectual disability and care needs is valuable when developing targeted interventions, organising services, and to improve the quality of life of homeless people.

Besides these factors, we explored predictors of stable housing. Housing stability is an important focus in research on homeless people. Studies among homeless people with housing stability as an outcome have used different definitions of stable housing, but it is remarkable that none of the definitions of stable housing included the perspective of homeless people: are they satisfied with their housing situation? The work presented in this thesis attempts to do more justice to the perspective of homeless people themselves regarding their housing situation. Incorporating the perspective of homeless individuals also fits the current focus (in both research and policymaking) on the client's perspective.

Finally, we investigated social exclusion indicators among homeless people to provide broad insight into their disadvantaged situation. Social exclusion refers to people who experience an accumulation of disadvantages in society and is regarded as a multidimensional concept. Homelessness can be viewed as an extreme form of social exclusion.

The above is operationalised by means of the following research questions:

1. What is the prevalence of substance use, substance misuse and dependence among Dutch homeless people and what is their pattern of substance use over time?
2. What is the prevalence of intellectual disability among Dutch homeless people and is intellectual disability related to psychosocial problems?
3. What are the care needs of Dutch homeless people with and without an intellectual disability and how do these care needs develop over time?
4. What is the prevalence of stable housing among Dutch homeless people and what are predictors of stable housing 2.5 years after they report to the social relief system?
5. What are the changes in indicators of social exclusion among Dutch homeless people and are changes in indicators of social exclusion associated with changes in psychological distress over a period of 2.5 years after reporting to the social relief system?

Chapter 2 provides additional information on the design of CODA-G4, including a description of the tracking methods used to follow the cohort longitudinally.

Chapter 3 addresses the prevalence of substance use among homeless people in the Netherlands, the pattern of their use and the relationship with their housing status at follow-up. The study shows that 57.7% of the participants were using one or more substances at baseline. Most of the substance-using participants used cannabis or alcohol (≥ 5 units on one occasion); the use of hard drugs was relatively rare (≤ 5%). Of the cohort, 27.0% could be classified as a substance misuser and 20.9% as substance dependent. Participants who were a substance user had a more disadvantageous housing situation at 1.5-year follow-up than those who were not a substance user.

Chapter 4 presents a cross-sectional study examining the prevalence of a suspected intellectual disability among homeless people in the Netherlands, as well as the relationship between a suspected intellectual disability and psychosocial problems in this group. The psychosocial problems examined in this study were: psychological distress, substance use, substance misuse, and substance dependence. It was found that the prevalence of suspected intellectual disability among this cohort of homeless people was 29.5%. Regarding psychosocial problems, relationships were found between a suspected intellectual disability and elevated levels of psychological distress. In addition, homeless people with a suspected intellectual

disability were more likely to be substance dependent than homeless people without a suspected intellectual disability, but did not report more substance use in general.

Chapter 5 explores self-reported care needs within a broad range of life domains between baseline and 1.5-year follow-up among homeless people in the Netherlands with and without a suspected intellectual disability. The study revealed no significant differences between participants with and without a suspected intellectual disability on: a) the number of life domains with an unmet and a met care need both at baseline and at follow-up, and on b) 'no care needs' at baseline. However, at follow-up, participants with a suspected intellectual disability reported 'no care needs' on fewer domains than participants without a suspected intellectual disability, while at baseline there were no differences between these groups. Between baseline and follow-up, the number of 'met care needs' showed a significant decrease on housing for both groups, but increased on finances and dental care for participants with a suspected intellectual disability. At follow-up, participants with a suspected intellectual disability more often preferred housing support available by appointment than those without a suspected intellectual disability.

Chapter 6 explores stable housing at 2.5-year follow-up among homeless people in the Netherlands. Stable housing was defined as at least 90 consecutive days independently housed or living in supportive housing (owned by care organisations) at the 2.5-year follow-up interview. Stable housing is investigated with and without including the perspective of the participants on their housing status (i.e. satisfaction with the housing status). The study also reports on the predictors of being stably housed at follow-up, separately for housing stability with and without including the perspective of the participants on their housing status. The study shows that 68.5% of the participants were stably housed at 2.5-year follow-up, and 51.1% were stably housed and satisfied with their housing status. Several independent predictors of housing stability, with and without including the perspective of the participants, were identified. For both the definitions of housing stability, being arrested and having a high level of somatisation were negative predictors of housing stability. Regarding stable housing and being satisfied with the housing status, having higher debts was also a negative predictor, whereas for stable housing without inclusion of the homeless people's perspective, unmet care needs was also a negative predictor of stable housing. Of all significant predictors, being arrested was the strongest predictor of housing instability at follow-up.

Chapter 7 examines changes in indicators of social exclusion among homeless people in the Netherlands over a period of 2.5 years after reporting to the social relief system. It also explores whether changes in indicators of social exclusion are associated with changes in psychological distress over a period of 2.5 years. For all of the four dimensions of social exclusion, i.e. 'material deprivation', 'access to social rights', 'social participation' and 'cultural integration', at least one indicator improved significantly between baseline and 2.5-year follow-up. With regard to the dimension 'material deprivation', participants reported more satisfied resources for basic needs (e.g. having enough money to cover food, clothing, housing, etc.). However, financial debts did not significantly improve and the majority of the participants still had high debts at follow-up. With regard to 'access to social rights', the results showed a remarkable improvement in the indicator 'stable housing': when entering the social relief system none of the participants were stably housed whereas 2.5 years later 66.7% were stably housed. Also, less unmet care needs and more health insurance coverage were reported. With regard to 'social participation', 2.5 years later there was more social support from family and friends, more relatedness to others, and more participants had a job or voluntary work. Finally, with regard to 'cultural integration', less participants had been arrested or received fines. Participants reporting less unmet care needs, less health insurance coverage, more social support from family and more feelings of relatedness to others reported reduced psychological distress more frequently. Conversely, an increase in unmet care needs, more health insurance coverage and less feelings of relatedness to others were related to an increase in psychological distress.

The final chapter **(chapter 8)** addresses the main findings and methodological considerations, and presents implications for practice, theory and further research. Around two-thirds of the CODA-G4 cohort of Dutch homeless people who reported to a central access point for social relief in 2011 were stably housed and around half of the cohort were stably housed and satisfied with their housing status at 2.5-year follow-up. Although being housed is an important step forward, it is a *first* step. To maintain a stable housing situation, progress and stability in other life domains is important. It is noteworthy that around one third of the participants is still unstably housed at 2.5-year follow-up; this subgroup is at risk of becoming long-term homeless and remains a substantial challenge for society/community, care providers and policymakers. Our results showed that those participants who had been arrested, were overrepresented among the unstably housed participants; this is in line with previous research. Intensive collaboration between homeless services and the criminal justice system is needed. Regarding the prevention of chronic homelessness, this finding stresses the importance of comprehensive aftercare programmes for offenders.
The relatively large number of homeless people with an intellectual disability emphasises that expertise in the field of intellectual disability among professionals working in homeless services is required. Screening of homeless people on intellectual disability may be an effective method to identify those who are particularly vulnerable within the homeless population. Customised care programmes, specialised housing facilities designed for homeless people with an intellectual disability, and expertise and interventions regarding working with clients with intellectual disabilities are recommended.

Although most of the participants are no longer homeless 2.5 years after they reported to the social relief system, these formerly homeless people remain a vulnerable group in terms of their (very) low education level and scarce social and economic resources. Our results emphasise that care providers should invest in ongoing care on life domains such as finances. Achieving self-sufficiency and full independence is not feasible for everyone; long-term support (for instance with finances) might be necessary for some of these (formerly) homeless people. Support services should take this into account when considering their care provision, and in the planning of services and policies.

The focus of this thesis is on factors measured at the individual level which are related to homelessness. The situation of homeless people is the result of a mixture of individual circumstances and structural factors. Labour markets, the housing system (e.g. availability of affordable housing), the economic crisis, and the organisation of debt assistance are examples of socio-structural factors that play a role in the

situation of homeless people. Taking socio-structural factors explicitly into account in future studies will promote better understanding of the situation of homeless people and provide more insight into which measures are needed to improve their situation.

CODA-G4 provided a unique opportunity to follow a cohort of homeless people in the Netherlands and has provided valuable insight into their situation and into developments over time. The results of the studies presented in this thesis show that the participants are on the way up, but also that ongoing support is still required.

Samenvatting

Het aantal mensen in Nederland dat feitelijk dakloos is, lag in 2015 op ongeveer 31.000. Naast geen dak boven hun hoofd hebben dakloze mensen vaak gezondheidsproblemen, psychische aandoeningen en/of psychosociale problemen. Dakloze mensen in Nederland zijn vaak alleenstaand, man, rond de 40 jaar oud, hebben een niet-Nederlandse achtergrond, zijn laag opgeleid en hebben een combinatie van zowel materiële problemen (financiële problemen, een laag inkomen, schulden) als immateriële problemen (geestelijke en/of lichamelijke gezondheidsproblemen).

Het Ministerie van Volksgezondheid, Welzijn en Sport vroeg het IVO Instituut voor Onderzoek naar Leefwijzen en Verslaving en Impuls – Onderzoekscentrum maatschappelijke zorg van het Radboud universitair medisch centrum om gezamenlijk om een cohortstudie op te zetten onder dakloze mensen. Dit onderzoek vond grotendeels plaats tijdens de looptijd van het Plan van Aanpak Maatschappelijke Opvang: een nieuw beleid om daklоosheid aan te pakken dat tussen 2006 en 2013 werd uitgevoerd in de vier grootste steden van Nederland: Amsterdam, Rotterdam, Den Haag en Utrecht. Deze cohortstudie – CODA-G4 genaamd - vond plaats onder dakloze mensen die onder dit beleid vielen. CODA-G4 is een observationele longitudinale multi-site cohortstudie die vanaf 2011 meer dan 500 dakloze mensen in Amsterdam, Rotterdam, Den Haag en Utrecht (de ‘G4’) volgde over een periode van 2,5 jaar. De deelnemers werden gedurende die periode 4 keer face-to-face geïnterviewd door getrainde interviewers. De laatste interviews vonden plaats in 2014. Dit proefschrift is gebaseerd op data van CODA-G4.

Dit proefschrift heeft tot doel om a) aan daklоosheid gerelateerde factoren – middelengebruik, verstandelijke beperkingen en zorgbehoeften - te onderzoeken onder dakloze mensen in Nederland, alsmede ontwikkelingen over tijd van deze factoren, b) om voorspellers van stabiele huisvesting te onderzoeken, en c) om veranderingen in indicatoren van sociale uitsluiting te onderzoeken, alsmede de samenhang tussen veranderingen in indicatoren van sociale uitsluiting en psychische klachten.

In dit proefschrift onderzochten we het individuele perspectief van dakloze mensen op de volgende factoren, alsmede ontwikkelingen over tijd van deze factoren:

1) Middelengebruik: in de wetenschappelijke literatuur hangt middelengebruik consistent samen met daklоosheid;
2) Verstandelijke beperking: deze factor krijgt in toenemende mate aandacht in onderzoek naar daklоosheid en in de praktijk, en lijkt aan de orde een bij een relatief grote subgroep binnen dakloze populaties; en
3) Hulpbehoeften: het onderzoeken van zelfgerapporteerde hulpbehoeften is belangrijk om inzicht te verkrijgen in welke hulp nodig is om aan te sluiten bij de behoeften van dakloze mensen.

Al deze factoren zijn relevant voor praktijk en beleid: een beter begrip van middelengebruik, verstandelijke beperkingen en hulpbehoeften is waardevol bij het ontwikkelen van gerichte interventies, het organiseren van zorg en voor het verbeteren van de kwaliteit van leven van dakloze mensen.

Daarnaast onderzochten we voorspellers van stabiele huisvesting. Stabiele huisvesting is een belangrijke uitkomstmaat in onderzoek naar dakloze mensen. Onderzoek naar dakloze mensen met stabiele huisvesting als uitkomstmaat gebruikt verschillende definities van stabiele huisvesting, maar opvallend is dat tot nog toe in geen van deze definities het perspectief van dakloze mensen zelf werd meegenomen: zijn zij tevreden met hun woonsituatie? Dit proefschrift doet meer recht aan het perspectief van dakloze mensen zelf door deze vraag mee te nemen bij het definiëren van stabiele huisvesting. Overigens past dit bij de huidige focus (zowel in onderzoek als beleid) op het meenemen van het cliëntenperspectief.

Tot slot onderzochten we indicatoren van sociale uitsluiting onder dakloze mensen om zo een breder inzicht te krijgen in hun nadelige situatie. Sociale uitsluiting is een multidimensionaal begrip en verwijst naar een opeenstapeling van maatschappelijke achterstanden. Daklоosheid is te beschouwen als een extreme vorm van sociale uitsluiting.

Bovenstaande is geoperationaliseerd in de volgende onderzoeksvragen:

1) Wat is de prevalentie van middelengebruik, middelenmisbruik en middelenafhankelijkheid onder Nederlandse dakloze mensen en hoe ontwikkelt het middelengebruik zich in de loop van de tijd?
2) Wat is de prevalentie van verstandelijke beperkingen onder Nederlandse dakloze mensen en hangen verstandelijke beperkingen samen met psychosociale problemen?
3) Wat zijn de hulpbehoeften van Nederlandse dakloze mensen met en zonder een verstandelijke beperking, en hoe ontwikkelen deze hulpbehoeften zich in de loop van de tijd?
4) Wat is de prevalentie van stabiele huisvesting onder Nederlandse dakloze mensen en wat zijn voorspellers van stabiele huisvesting 2,5 jaar nadat zij zich meldden bij de maatschappelijke opvang?
5) Wat zijn de veranderingen in indicatoren van sociale uitsluiting onder Nederlandse dakloze mensen, en hangen deze samen met veranderingen in psychische klachten gedurende een periode van 2,5 jaar na aanmelding bij de maatschappelijke opvang?

Hoofdstuk 2 geeft informatie over het onderzoeksdesign van CODA-G4, waaronder een beschrijving van de gebruikte methoden om uitval van deelnemers aan het cohort over de jaren heen zoveel mogelijk te beperken.

H**oofdstuk 3** rapporteert de prevalentie van middelengebruik onder dakloze mensen in Nederland, de ontwikkeling van hun gebruik over een periode van 1,5 jaar, en de samenhang van middelengebruik met hun woonsituatie na 1,5 jaar. Dit onderzoek laat zien dat 57,7% van de deelnemers één of meerdere middelen gebruikte ten tijde van de eerste meting. Meestal gebruikten zij cannabis of alcohol (≥ 5 eenheden op één gelegenheid). Het gebruik van harddrugs kwam onder deze groep relatief weinig voor (≤ 5%). Bij 27,0% van de cohortdeelnemers kon middelenmisbruik worden vastgesteld en bij 20,9% middelenafhankelijkheid. Deelnemers die middelen gebruikten hadden een slechtere woonsituatie na 1,5 jaar dan degenen die geen middelen gebruikten.

Hoofdstuk 4 beschrijft de resultaten van een cross-sectionele studie naar de prevalentie van een vermoedelijke verstandelijke beperking onder dakloze mensen in Nederland, alsmede de samenhang tussen een vermoedelijke verstandelijke beperking en psychosociale problemen. De onderzochte psychosociale problemen in deze studie waren: psychische klachten, middelengebruik, middelenmisbruik en middelenafhankelijkheid. De prevalentie van een vermoedelijke verstandelijke beperking binnen dit cohort was 29,5%. Wat betreft psychosociale problemen werden verbanden gevonden tussen een vermoedelijke verstandelijke beperking en een verhoogde score op psychische klachten. Daarnaast bleken dakloze mensen met een vermoedelijke verstandelijke beperking vaker middelenafhankelijk te zijn dan dakloze mensen zonder een vermoedelijke verstandelijke beperking, maar zij bleken niet in het algemeen meer middelengebruik te rapporteren.

In **hoofdstuk 5** worden zelfgerapporteerde hulpbehoeften bij dakloze mensen in Nederland met en zonder een verstandelijke beperking op een groot aantal leefgebieden gerapporteerd ten tijde van de eerste meting en ten tijde van de vervolgmeting na 1,5 jaar. Deze studie laat zien dat er geen significante verschillen bestaan tussen deelnemers met en zonder een vermoedelijke verstandelijke beperking op: a) het aantal leefgebieden met een onvervulde en een vervulde hulpbehoefte op zowel de eerste meting als op de vervolgmeting, en op b) ‘geen hulpbehoefte’ ten tijde van de eerste meting. Echter, ten tijde van de vervolgmeting rapporteerden deelnemers met een vermoedelijke verstandelijke beperking ‘geen hulpbehoefte’ op minder leefgebieden dan deelnemers zonder een vermoedelijke verstandelijke beperking, terwijl er ten tijde van de eerste meting geen verschillen tussen deze groepen bestonden. Tussen de eerste meting en de vervolgmeting nam het percentage deelnemers met een ‘vervulde hulpbehoefte’ op ‘huisvesting’ significant af bij beide groepen, maar nam bij deelnemers met een vermoedelijke verstandelijke beperking toe op de leefgebieden ‘financiën’ en ‘gebitszorg’. Ten tijde van de vervolgmeting wensten deelnemers met een vermoedelijke verstandelijke beperking vaker begeleiding op afspraak bij het wonen dan degenen zonder een vermoedelijke verstandelijke beperking.

In **hoofdstuk 6** staat stabiele huisvesting onder dakloze mensen in Nederland ten tijde van de vervolgmeting na 2,5 jaar centraal. Stabiele huisvesting hebben we gedefinieerd als minstens 90 opeenvolgende dagen zelfstandig gehuisvest of begeleid wonend (woning is eigendom van een instelling) ten tijde van de vervolgmeting na 2,5 jaar. Stabiele huisvesting is onderzocht met en zonder inclusie van de subjectieve beleving van de deelnemers op hun woonsituatie (tevredenheid met de woonsituatie). Daarnaast rapporteert deze studie over voorspellers van stabiele huisvesting ten tijde van de vervolgmeting, afzonderlijk voor stabiele huisvesting met en stabiele huisvesting zonder inclusie van de subjectieve beleving van de deelnemers op hun woonsituatie. Deze studie laat zien dat 68,5% van de deelnemers stabiel gehuisvest is ten tijde van de vervolgmeting na 2,5 jaar, en dat 51,1% *tevreden* stabiel gehuisvest is. Verschillende onafhankelijke voorspellers van stabiele huisvesting, met en zonder inclusie van de subjectieve beleving van de deelnemers, zijn geïdentificeerd. Gearresteerd zijn en het hebben van veel somatische klachten waren negatieve voorspellers van beide definities van stabiele huisvesting. Voor tevreden stabiele huisvesting was het hebben van hoge schulden ook een negatieve voorspeller, terwijl voor stabiele huisvesting zonder inclusie van de subjectieve beleving van deelnemers onvervulde hulpbehoeften een negatieve voorspeller was. Gearresteerd zijn bleek van alle significante voorspellers de sterkste voorspeller van niet stabiele huisvesting ten tijde van de vervolgmeting.

In **hoofdstuk 7** worden indicatoren van sociale uitsluiting onder dakloze mensen in Nederland gedurende een periode van 2,5 jaar nadat zij zich meldden bij de maatschappelijke opvang onderzocht. Ook behandelt dit hoofdstuk of veranderingen in indicatoren van sociale uitsluiting samenhangen met veranderingen in psychische klachten gedurende een periode van 2,5 jaar. Voor alle vier de dimensies van sociale uitsluiting ('materiële deprivatie', 'toegang tot sociale rechten', 'sociale participatie' en 'culturele integratie') verbeterde tenminste één indicator significant tussen de eerste meting en de vervolgmeting na 2,5 jaar. Wat betreft de dimensie 'materiële deprivatie', rapporteerden deelnemers meer uitgavenposten waarvoor zij genoeg geld hadden om aan uit te geven (bijv. voor voeding, kleding, wonen, etc.). De situatie wat betreft schulden verbeterde echter niet significant, en de meerderheid van de deelnemers had nog altijd hoge schulden ten tijde van de vervolgmeting. Wat betreft 'toegang tot sociale rechten' lieten de resultaten een aanzienlijke verbetering zien voor de indicator 'stabiele huisvesting': toen de deelnemers de maatschappelijke opvang binnenkwamen was niemand stabiel gehuisvest, 2,5 jaar later is 66,7% van de deelnemers stabiel gehuisvest. Ook werden minder onvervulde hulpbehoeften gerapporteerd en hadden meer deelnemers een zorgverzekering. Wat betreft 'sociale participatie' bleek er na 2,5 jaar een hogere mate van sociale steun van familie en vrienden te zijn, meer verbondenheid met anderen en meer deelnemers hadden (vrijwilligers)werk. Tot slot, met betrekking tot 'culturele integratie' waren minder deelnemers gearresteerd of hadden een boete ontvangen. Deelnemers die minder onvervulde hulpbehoeften, minder vaak een zorgverzekering, meer sociale steun van familie en meer verbondenheid met anderen rapporteerden, hadden vaker een afname van psychische klachten. Omgekeerd gold dat deelnemers die meer onvervulde hulpbehoeften, vaker een zorgverzekering en minder gevoelens van verbondenheid rapporteerden vaker een toename van psychische klachten hadden.

Het laatste hoofdstuk (**hoofdstuk 8)** geeft een beschouwing over de belangrijkste resultaten en methodologische kwesties, en behandelt implicaties voor praktijk, theorie en toekomstig onderzoek. Ongeveer twee derde van het CODA-G4 cohort van dakloze mensen dat zich in 2011 meldde bij de maatschappelijke opvang is 2,5 jaar later stabiel gehuisvest en ongeveer de helft is 2,5 jaar later *tevreden* stabiel gehuisvest. Ondanks dat gehuisvest zijn een belangrijke stap vooruit is, is dit een *eerste* stap vooruit. Om een stabiele woonsituatie te behouden, is vooruitgang en stabiliteit op andere leefgebieden van belang. Het is opvallend dat ongeveer een derde van de deelnemers na 2,5 jaar nog steeds niet stabiel gehuisvest is: deze subgroep riskeert langdurige daklooshеid en het blijft een wezenlijke uitdaging voor de samenleving, zorgverleners en beleidsmakers om dit te voorkomen. Onze resultaten laten zien dat deelnemers die in het verleden gearresteerd waren, oververtegenwoordigd zijn binnen de groep van niet-stabiel gehuisveste deelnemers; dit sluit aan bij eerder onderzoek. Intensieve samenwerking tussen daklozenzorg en justitie is nodig. Wat betreft het voorkomen van chronische daklooshеid benadrukt dit resultaat het belang van uitgebreide nazorgprogramma's voor delinquenten.
Het relatief hoge aantal dakloze mensen met een verstandelijke beperking benadrukt dat expertise over verstandelijke beperkingen bij professionals in de daklozenzorg nodig is. Het screenen van dakloze mensen op een verstandelijke beperking kan een effectieve methode zijn om diegenen te identificeren die extra kwetsbaar zijn binnen de daklozenpopulatie. Aangepaste zorgprogramma's, gespecialiseerde woonvoorzieningen voor dakloze mensen met een verstandelijke beperking en expertise en interventies wat betreft werken met cliënten met verstandelijke beperkingen worden aanbevolen.

Ondanks dat de meeste deelnemers 2,5 jaar nadat zij zich meldden bij de maatschappelijke opvang niet meer dakloos zijn, blijven deze ex-dakloze mensen een kwetsbare groep door hun (zeer) lage opleidingsniveau en beperkte sociale en economische hulpbronnen. Onze resultaten benadrukken dat zorgverleners moeten investeren in langdurige zorg, bijvoorbeeld op het gebied van financiën. Het bereiken van zelfredzaamheid en volledige zelfstandigheid is niet haalbaar voor iedereen; langdurige begeleiding (bijvoorbeeld bij hun financiën) kan nodig zijn voor sommige van deze (ex-)dakloze mensen. Instanties dienen dit in acht te nemen bij hun hulpverlening en in het plannen van diensten en beleid.

De focus van dit proefschrift ligt op factoren gemeten op individueel niveau die samenhangen met daklooshеid. De situatie van dakloze mensen komt voort uit een combinatie van individuele omstandigheden en structurele factoren. De arbeidsmarkt, de huizenmarkt (bijvoorbeeld de beschikbaarheid van betaalbare woningen), de economische crisis en de organisatie van de schuldhulpverlening zijn voorbeelden van socio-structurele factoren die een rol spelen in de situatie van dakloze mensen. Het includeren van socio-structurele factoren in toekomstig onderzoek zal het inzicht in de situatie van dakloze mensen bevorderen en ook meer zicht geven op welke maatregelen nodig zijn om hun situatie te verbeteren.

CODA-G4 bood een unieke mogelijkheid om een cohort van dakloze mensen in Nederland te volgen en gaf waardevolle inzichten in hun situatie en ontwikkelingen daarin over tijd. De bevindingen in dit proefschrift laten zien dat de situatie van deelnemers zich positief ontwikkelt, maar dat begeleiding nodig blijft.

Dankwoord

‘Wat een ontzettend interessant onderzoek.’, dacht ik toen ik in 2009 het onderzoeksvoorstel van CODA-G4 las. En al snel ook: ‘Wat zou ik graag aan dit onderzoek werken!’. Dike en Miranda, veel dank dat jullie me deze kans gaven.

Ik vond het een geweldig onderzoek om aan te werken. Dat lag niet alleen aan het onderwerp, maar ook zeker aan de mensen met wie ik samenwerkte. Carola, de eerste 3 jaar was jij mijn copromotor. Wat was het fijn om door jou begeleid te worden in die eerste jaren en wat was het prettig samenwerken met jou. Je liet blijken dat je veel vertrouwen in mij had. Dit kwam mijn ontwikkeling die eerste jaren erg ten goede, dank daarvoor! Ik vond het heel jammer dat je wegging bij het IVO en je niet meer mijn copromotor kon zijn. Hoe moest het nu verder? Maar toen kwam Gerda in beeld: een heel waardige vervanger. Gerda, je was al jaren mijn kamergenoot. Dat we het goed met elkaar konden vinden wist ik al lang, maar je bleek ook nog eens een geweldige copromotor te zijn. Stimulerend, heel betrokken en met altijd goede punten bij mijn stukken. Dank voor alles! Sandra, mijn tweede copromotor, ook jij kwam wat later in het project bij het onderzoeksteam. Ik vind het knap hoe jij alles hebt opgepakt en hoe je je snel wegwijs hebt gemaakt in het project. Je hoorde er al snel helemaal bij en het was prettig om met je samen te werken. Dank voor je begeleiding op afstand!

Dike, ik vond het heel fijn dat jij mijn promotor was. Je hield de grote lijnen in de gaten, had altijd scherp naar mijn stukken gekeken en onze maandelijkse overleggen waren prettig en efficiënt. Er zijn heel wat belangrijke knopen doorgehakt tijdens deze overleggen! Judith, ik ben dankbaar dat jij -als dé hoogleraar op het gebied van maatschappelijke zorg en dakloosheid - mijn tweede promotor was. Dank voor je grondige werk en feedback op mijn stukken, dit was heel waardevol.

Mede-promovenda Jorien, de afstand Rotterdam-Nijmegen is niet gering. Ik vond het jammer dat we geen werkplek deelden, maar telefonisch, per mail en tijdens overleggen hebben we toch regelmatig kunnen sparren. Dat was nuttig én gezellig! Nog even en dan ligt er straks ook een mooi proefschrift van jouw hand.

Ympkje, Marianne, Angeline, Jasper, Laura en Anna, jullie waren als interviewers in Rotterdam en Den Haag ontzettend belangrijk voor het slagen van dit onderzoek. Mede dankzij jullie *social skills* en oprechte interesse in de doelgroep wilden bijna alle deelnemers elke keer weer deelnemen aan de interviews. Dank voor jullie inzet en flexibiliteit!

Vele professionals hebben ervoor gezorgd dat CODA-G4, en daarmee dit proefschrift, tot stand kwam. Leden van de klankbordgroep, medewerkers en managers van opvangvoorzieningen en beleids-medewerkers: veel dank voor jullie inhoudelijke en praktische ondersteuning!

Sara, bedankt voor de fijne samenwerking tijdens het laatste deel van CODA-G4. Laraine, dank voor de grondige en snelle correcties op mijn Engels. Joost, dank voor de technische ondersteuning.

Ook de leden van de deelnemerspanels wil ik bedanken, en in het bijzonder de meest trouwe leden die er vanaf het begin al bij waren en al die jaren meedachten: Wil, Frank, Eliza, Bert, Loes, Don, Yvonne, Petra †, Erik, Aad en Patrick. Dankzij jullie ervaringskennis en binding met het veld hielden jullie ons als onderzoekers scherp en boden jullie ons belangrijke inzichten. Bedankt voor jullie betrokkenheid! Cliëntenraad van het CVD, dank voor jullie belangstelling in dit onderzoek.

Marcel Slockers, dank voor je interesse in mijn werk: dat is helemaal wederzijds. Ik bewonder je inzet en bevlogenheid om de zorg voor dakloze mensen te verbeteren én de mooie resultaten die je daarmee bereikt.

En dan de hoofdrolspelers van dit onderzoek: de ruim 500 dakloze mensen die hebben meegewerkt aan de interviews. Zonder de openheid over jullie situatie op zo'n moeilijk punt in jullie leven was dit onderzoek er niet geweest. Een klein deel van jullie sprak ik zelf, en dat vond ik één van de boeiendste en indrukwekkendste onderdelen van dit project. Het was geweldig om met eigen ogen te zien dat de meesten van jullie belangrijke stappen vooruit hebben gezet. Ik wens jullie het allerbeste voor de toekomst!

Beste IVO-collega's, jullie maken dat het IVO zo'n fijne werkplek is met zo'n prettige sfeer. Jullie gezelligheid, lunchwandelingen, adviezen, discussies en meeleven waren belangrijk voor me. Cas, jou wil ik in het bijzonder bedanken. Je bent een belangrijke factor voor me binnen het IVO, zowel inhoudelijk als persoonlijk. Ik vind het tof dat je mijn paranimf wil zijn!

Lieve vrienden, familie en schoonfamilie, bedankt voor alle gezelligheid, interesse en steun. Jullie zijn onmisbaar!

Els en Johan, door dit onderzoek werd het me weer eens duidelijk hoe belangrijk een goede start is en dat dit helaas lang niet voor elk kind weggelegd is. Wat heb ik een geluk dat jullie me als ouders deze goede start wel hebben gegeven!

Allerliefste Jan, mijn liefde, steun en toeverlaat, beste vriend, paranimf en sinds kort ook geweldige papa van onze zoon. Wat heerlijk om mijn leven met jou te delen!

En tot slot mijn lieve kleine Teun, de laatste maanden dat ik hard aan dit proefschrift werkte zat jij nog in mijn buik. Nu is mijn proefschrift af, en begin jij de wereld te ontdekken. Wat ben ik ongelofelijk blij met jou!

Curriculum Vitae

Barbara van Straaten was born on 10 April 1984 in Rotterdam. In 2002 she completed secondary education at the Libanon Lyceum, Rotterdam. Subsequently, she started studying Psychology at Utrecht University where she obtained a Bachelor's degree in 2006. In 2008, she obtained a Master's degree in Psychology at the Erasmus University Rotterdam. During her Master's study she worked as a junior researcher at the Parnassia Groep. After obtaining her Master's degree, she started working as a junior researcher at the IVO Addiction Research Institute in Rotterdam. She specialised in qualitative and quantitative research among vulnerable people, including people with a drug addiction and homeless people. In 2010, she started a PhD project on the living situation of a cohort of homeless people. This project was carried out by IVO and involved close cooperation with Impuls - Netherlands Center for Social Care Research of the Radboud university medical center, Nijmegen. During her PhD project, she obtained a Master's degree in Public Health at the Netherlands Institute for Health Sciences (NIHES). From May 2015 she has been working as a researcher at IVO and is involved in various projects.

Barbara van Straaten is geboren op 10 april 1984 in Rotterdam. In 2002 behaalde zij haar vwo-diploma aan het Libanon Lyceum in Rotterdam. Daarna ging zij Psychologie studeren aan de Universiteit Utrecht waar zij in 2006 haar bachelordiploma behaalde. In 2008 verkreeg zij haar masterdiploma Psychologie aan de Erasmus Universiteit Rotterdam. Tijdens haar masterstudie werkte zij als junior onderzoeker bij de Parnassia Groep. Na het behalen van haar masterdiploma, werd zij junior onderzoeker bij het IVO Instituut voor Onderzoek naar Leefwijzen en Verslaving in Rotterdam. Zij specialiseerde zich in kwalitatief en kwantitatief onderzoek onder kwetsbare mensen, waaronder mensen met een verslaving en dakloze mensen. In 2010 startte zij met haar promotietraject over de leefsituatie van een cohort van dakloze mensen. Dit project werd uitgevoerd door het IVO in nauwe samenwerking met Impuls – Onderzoekscentrum maatschappelijke zorg van het Radboud universitair medisch centrum in Nijmegen. Tijdens haar promotietraject behaalde zij een masterdiploma Public Health bij het Netherlands Institute for Health Sciences (NIHES). Vanaf mei 2015 werkt zij als onderzoeker bij het IVO en is ze betrokken bij diverse projecten.

Academic publications

2016

Van Straaten, B., Van de Mheen, Van der Laan, J., Rodenburg, G., Boersma, S.N., & Wolf, J.R.L.M. (2016). Homeless People in the Netherlands: CODA-G4, a 2.5-year Follow-up Study. *European Journal of Homelessness*, 10(1), 101–116.

Van Straaten, B., Van der Laan, J., Rodenburg, G., Boersma, S.N., Wolf, J.R.L.M., & Van de Mheen, D. (2016). Dutch homeless people 2.5 years after shelter admission: what are predictors of housing stability and housing satisfaction? *Health & Social Care in the Community*.

2015

Van Straaten, B., Rodenburg, G., Van der Laan, J., Boersma, S.N., Wolf, J.R.L.M., & Van de Mheen, D. (2015). Self-reported care needs of Dutch homeless people with and without a suspected intellectual disability: a 1.5-year follow-up study. *Health & Social Care in the Community*.

Van Straaten, B., Rodenburg, G., Van der Laan, J., Boersma, S., Wolf, J., & Van de Mheen, D. (2015). Substance use among Dutch homeless people, a follow-up study: Prevalence, pattern and housing status. *European Journal of Public Health*, 26(1), 111–116.

2014

Van Straaten, B., Schrijvers, C. T. M., Van der Laan, J., Boersma, S. N., Rodenburg, G., Wolf, J. R. L. M., & Van de Mheen, D. (2014). Intellectual Disability among Dutch Homeless People: Prevalence and Related Psychosocial Problems. *PLoS ONE*, 9(1), e86112.

Van Straaten, B., Schrijvers, C., Van der Laan, J., Boersma, S., Rodenburg, G., Wolf, J., & Van de Mheen, D. (2014). Dakloze mensen met een verstandelijke beperking: extra kwetsbaar. *MGV*, 5(69), 22–30.

Van Straaten, B., Van der Laan, J., Schrijvers, C., Boersma, S., Maas, M., Wolf, J., & Van de Mheen, D. (2014). Middelengebruik en psychische klachten van daklozen in de vier grote steden. *Verslaving*, 10(1), 19–36.

Bommelé, J., Schoenmakers, T. M., Kleinjan, M., Van Straaten, B., Wits, E., Snelleman, M., & Van de Mheen, D. (2014). Perceived pros and cons of smoking and quitting in hard-core smokers: a focus group study. *BMC Public Health*, 14(1), 175.

In revision

Van Straaten, B., Rodenburg, G., Van der Laan, J., Boersma, S.N., Wolf, J.R.L.M., & Van de Mheen, D. (in revision). Changes in indicators of social exclusion among homeless people over a 2.5-year period.

Submitted

Van der Laan, J., Boersma, S.N., Van Straaten, B., Rodenburg, G., Van de Mheen, D., Wolf, J.R.L.M. (submitted). Personal goals and factors related to QoL in Dutch homeless people: what is the role of goal related self-efficacy?

Van der Laan, J., Boersma, S.N., Van Straaten, B., Rodenburg, G., Van de Mheen, D., Wolf, J.R.L.M. (submitted). Health-related profiles of Dutch homeless people: a comparison of their quality of life, service use, unmet needs and social support.

Van Straaten, B., Rodenburg, G., Walhout, M., & Van de Mheen, D. (submitted). Anders uit de schulden: wat werkt voor mensen met een verslaving?

PhD Portfolio

Summary of PhD training and teaching

Name PhD student: B. van Straaten	PhD period: 2010-2015
Erasmus MC Department: Public Health	Promotor(s): H. van de Mheen, PhD; J.R.L.M. Wolf, PhD
Research School: NIHES	Supervisor(s): G. Rodenburg, PhD; S.N. Boersma, PhD

1. PhD training

	Year	Workload (Hours/ECTS)
General courses		
- English Biomedical Writing and Communication	2014	3 ECTS
Specific courses (e.g. Research school, Medical Training)		
- Master of Science in Public Health, Netherlands Institute for Health Sciences (NIHES)	2010-2014	70 ECTS
Seminars and workshops		
- Presenting yourself and your work	2014	4 hours
Presentations		
- Cohortstudie Daklozen in de vier grote steden (Forum Alcohol en Drugs onderzoek (FADO))	2011	12 hours
- Verstandelijke beperkingen onder daklozen: prevalentie en geassocieerde psychosociale problemen (Nederlands Congres Volksgezondheid (NCVGZ))	2014	12 hours
- Middelengebruik onder dakloze mensen: prevalentie, verloop en relatie met woonsituatie (Forum Alcohol en Drugs onderzoek (FADO))	2014	12 hours
- Verstandelijke beperkingen onder dakloze mensen (Straatdokters Symposium)	2014	12 hours
- Intellectual disability among Dutch homeless people (European Public Health Conference, Glasgow, Scotland)	2014	12 hours
- Verstandelijke beperkingen onder dakloze mensen (congres 'Focus op kennis en onderzoek')	2015	12 hours
- Dakloze mensen in de vier grote steden: veranderingen in 2,5 jaar (Studiedag Beschermd Wonen)	2015	12 hours
- Verstandelijke beperkingen onder dakloze mensen (CEPHIR seminar)	2016	12 hours
(Inter)national conferences		
- 21e Forum Alcohol en Drugs onderzoek (FADO), Utrecht, the Netherlands	2011	8 hours
- Nederlands Congres Volksgezondheid (NCVGZ), Rotterdam, the Netherlands	2014	8 hours
- 1e Nederlandse Straatdokters Symposium, 's-Hertogenbosch, the Netherlands	2014	8 hours
- 24e Forum Alcohol en Drugs onderzoek (FADO), Utrecht, the Netherlands	2014	8 hours
- 7th European Public Health Conference, Glasgow, Scotland	2014	24 hours
- Congres 'Focus op kennis en onderzoek', Utrecht, the Netherlands	2014	8 hours
- Studiedag Beschermd Wonen, Nieuwegein, the Netherlands	2015	8 hours

2. Teaching

Supervising practicals and excursions, Tutoring		
- NIHES course 'From practice to solution in Public Health'	2015	8 hours

IVO
Heemraadssingel 194
3021 DM Rotterdam
T 010 425 33 66
F 010 276 39 88
Secretariaat@ivo.nl
www.ivo.nl